SIEMENS

CC
Consumption Control V4.0
User's guide

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For internal use only

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1 About this document

1.1 Referenced documents

CAFM documentation

Document	Content		Order no.
CC User's guide	This document User's guide for version 4.0	01.09.2006	CM2B8716en_01
PDM User's guide	User's guide for version 4.0	01.09.2006	CM2B8736en_01
ADP User's guide	User's guide for version 4.0	01.09.2006	CM2B8705en_01

1.2 Document structure

Validity

This document is valid for CC V4.0.

Chapter structure

The **order** of the chapters is oriented to typical procedures on initial setup CC. Each chapter starts with the topic "What is it?".
The brief introductions are intended to help you understand the individual system concepts of CC as well as any co-dependencies. Chapter 2 summarizes all above mentioned brief introductions under the heading "Key concepts in CC".

Terms are defined when they first occur in the document. In order to simplify term searches, the appendix to this document contains a glossary.

To enable you to easily locate individual information, an **index** is located at the end of this document.

Structures established according to access rights

Most chapters have an introductory section called "Preparatory work", divided as follows:

- "Preparatory work on part of Building Automation"
  This type of work requires access level 5 and is **not** described in this document
- "Preparatory work on part of the system administrator"
  This work requires access level 4 and should only be performed by a person having detailed knowledge of CC.

This will help you better understand co-dependencies and properly assign tasks upon setting up CC, even if you do not have the required access rights.

Operating instructions

In order to provide only brief instructions for repetitive tasks, e.g., selecting a window, we use corresponding shortcuts throughout this document. These shortcuts are described in detail in the chapter "Conventions".

1.3 Conventions

For buttons and field descriptions as well as for shortcuts regarding functions or repetitive processes, the following conventions apply throughout this document:

Keyboard operations

Keyboard keys are always displayed using < and >.
Example: **<Shift>, <Shift N>**

Labeling of dialog boxes and fields

Names of dialog boxes and fields on the Windows user interface are printed in *Italics*.
Example: **The *Definitions* dialog box allows you to ....**

Typing information in a text field

When prompted to type in a value in a field, the following shortcut is used:
Example: **In the *Series* field — type in the name of the data series.**
Example: **Type "13" in the *Series* field.**
Keyboard entries are always set in quotation marks "...". .

Buttons on the Windows user interface

Buttons are always printed in brackets [and].
Example: When you click [Cancel], the ...
Example: [Save]
This prompts you to click [Save].

Names for menus and menu commands

Names of menus and the associated menu commands are written in SMALL CAPS.
Example: **Select NEW METER from the STRUCTURES menu to ...**

Chain of instructions

The individual steps of instructions that must be performed in a specific order are separated by a | slash.

Example: SYSTEM | METER | Right click | NEW METER
This tells you to right-click the METER menu command in the SYSTEM menu. Another menu opens. Select the NEW METER menu item.

Mouse click

In instruction chains, **right-click** and **double-click** are especially mentioned. For all other cases, click the left-click the selections.

Context menus

Right-clicking an item in most cases opens the context menu.

Date and time format

The display of date and time depends on the settings of your Windows installation (Windows 95/98 and NT4.0 and higher [Start > Settings > Control Panel > Regional Settings].

"Year 2000" compliance

If year numbers are entered with just two digits, the following assignments apply:
50 – 99 = 1950 – 1999
00 – 49 = 2000 – 2049

In CC as well as in PDM DataComm and DataEdit, the following applies to the leap day of 29 February for the years 2000, 2004, 2008 and future leap years:

- Set the day to 1,
- then select the month and the year,
- then set the day to 29.

Selection

New: CC 3.0 and future versions have two general selection functions. They open a dialog box for

- Selection
- Navigation
- Details
- Definitions
- Properties

etc.

Selection

This symbol opens a selection.
For example, to select a date, clicking the symbol opens a drop-down text box to select the date using the mouse.

Dialog box

This symbol opens the associated dialog box.
For example, in the "Manual Data Entry for Meter" dialog box, clicking opens the "Meter" dialog box allowing you to edit the meter data.

Important

Important information (titled "Important", "Note", "Tip") is marked by the lamp symbol to the left .

2 The concept of CC

2.1 What is CC?

Resource costs

One of the most important tasks of building managers is to monitor and reduce the operating costs for their buildings.
Some of these costs are resource costs — an aspect that this program intends to cover.

Budget monitoring

The primary goal of Consumption Control is to help the building manager monitor the budget or, in other words, reduce resource costs.
For this purpose, CC processes consumption data acquired manually or by the building automation and control system. CC is capable of a timely response to changes in prices or usage of a building, etc. It considers environmental conditions and seasonal dependencies, and generates meaningful reports which serve as the basis for both taking concrete measures to reduce energy consumption for tracing them.

CC is a part of a comprehensive software package

Consumption Control "CC" by Siemens Building Technologies represents one individual part of a completely integrated software package that fully satisfies all requirements of a modern building manager. The entire service package is called CAFMS, Computer-Aided Facility Management Services.

An integrated facility management system comprises the following components:
- Building operation, control, maintenance management
- Consumption Control

2.2 Key concepts in CC

The section below explains the key concepts you must be familiar with to work with Consumption Control.

Operation

You will see that Consumption Control is primarily **object-oriented** and not function-oriented. The impact of this is explained below:

Right mouse button

In CC, you will often open the context menu by pressing the right mouse button, as many commands are available only in the context menu. Proceed as follows:
- In the Explorer, go to the desired object.
- Right-click the object (left or right portion of the Explorer window).
- Select the desired menu command.

2.2.1 Dimensions

The most important concept within Consumption Control is the concept of dimensions. The dimensions that you set for a project represent the **focus** you will later apply to create reports.

Dimension

Subdivision of an organizational unit into hierarchically structured subunits.

Important!

A dimension directly impacts on the creation of reports, as reports must always relate to one of the subunits.

In CC, several freely definable dimensions can simultaneously be created. This enables you to optimally adjust CC to your needs.

Typical CC dimensions are:

- Building dimension (different hierarchies such as real estate property, buildings, floors, etc.).
- Organizational dimension (business units, departments, groups).
- Cost center.

A dimension is divided into *levels* and *nodes*.

Level

Hierarchies within a dimension

When you define levels, the associated dimension is divided into hierarchically structured units. Typical levels are:

- (Real estate) Property, building, floor, zone, and room.
- (Organization) Business area, production area, department.

Nodes

Subunit of a level

Typical nodes are:

- Within a building: Floor A, Floor B.
- On a floor: Room A, laboratory, class room Z.

Almost each project has at least one dimension that is based on geographical units. As a consequence, all examples in this documentation are oriented to a building dimension.

Note

In CC V3, all dimensions are equal. Earlier restrictions applicable to "distribution" and "forecast models" no longer exist.

2.2.2 Meter

Meters are essential in CC, as they supply the information used to derive operating costs and resource consumption and to display reports.
With regard to meters, the following three aspects can be distinguished:

- Acquisition of meter data.
- Internal calculation of meter data.
- Evaluation of meter data in reports.

Acquiring meter data

CC differentiates between physical and logical meters:

- **Physical meters** are responsible for actual data acquisition in the facility. They, for example, measure water consumption in liters, oil consumption in tons, energy consumption in kWh, or even static values such as outside temperature.
- **Logical meters**: Internally, CC only works with logical meters. Logical meters are characterized as follows:

They have a **Name**.
They belong to a specific **Value Type**
They belong to a specific **Flow nature**.

Logical meters derive their meter data from:
Data recorded by physical meters of the building automation and control system.
Manual data entry for meter data read manually.
Virtual meters where data is calculated via a formula from other meter data.

Advantages of this concept

Physical meters may change over time. A defective meter is exchanged and replaced by another product or by e.g., a PDM meter, etc..

The **logical meter** in this case does not change. The only information required is the date range for which the physical meter was responsible.

Internal calculation of meter data

Flow nature

Each meter must be assigned to one of the following four flow natures. This allows for mutually billing the meter data. Example: Energy losses can be calculated from the difference between the total supplied energy and the sum of energy consumption. CC supports the following four flow natures:

Production (meter)
This type of meter measures a medium emitted for **generation** purposes such as the amount of gas passed to a central heating boiler (for generation purposes).

Distribution (meter)
This type of meter measures the medium distributed, e.g., the amount of hot water distributed by a central boiler.

Consumption (meter)
This type of meter measures consumption at the location where the energy or any other medium is consumed.

Other (meters)
This type of meter is reserved for all other flow natures, for instance, to acquire data from access control systems or outdoor temperature data, etc..

Evaluating meter data in reports

Value type

Means to group logical meters measuring similar or related types of consumption.
Typical examples for value types are:

- Heating/cooling energy.
- Chilled water.
- Electricity, etc.

Advantages of this concept
Data from several related meters within one value type are available to evaluate node reports.
Forecast models can be applied to the entire value type and not just to one individual meter.

Note

Do not confuse the term value type with the term medium. A medium (e.g. oil or gas) is consumed to produce a value type (e.g. heating energy).

Tip

The value type defines the meters that appear in the report column. The following applies:

- The more clearly defined the value type, the better the report.
- The more comprehensive the value type, the easier report creation.

2.2.3 Media and prices

CC always applies media when operating **costs** and efficiency must be calculated.

Each medium can be assigned to a price model. This is meaningful when the invoices of an external supplier are based on the medium (e.g. natural gas price per m^3) and not on the hot water produced.

A conversion factor can be assigned to convert the medium internally. This allows CC to convert, for instance, gas billed in [m^3] to [kWh].

Medium

Original element (e.g. oil) used to produce that which we want to provide (e.g. heating energy).

That which we want to provide is called a value type.

Note

Each medium is assigned to a meter.
Typical examples for media are:
- Drinking water / domestic hot water
- Oil/gas
- Electricity (high tariff/low tariff).

Note

Do not confuse the term value type with the term medium.
- A **medium (oil, gas)** is used to produce an element of the
- value type (heating energy).

Price model

A mathematical concept used to calculate a currency from the input unit.

A price model comprises all rules to calculate the supplier cost for a medium based on its consumption, e.g., consumption, connection, and administrative costs.

Note

Each price model is assigned to a medium.
Typical price model, for example, are for
- Oil
- Electrical energy at high tariff
- Water
- Electrical energy at low tariff

2.2.4 Reports

Reports are meaningful only when the calculated consumption data are put in relation to a different variable. It is nice to, for example, be able to view the total energy consumption for a building. However, suitable measures can be introduced only if
- in a **hospital** the energy consumption per bed in a hospital or
- **in a school building** the energy consumption per m^2 is known and if it can be compared to a forecast. For this purpose, CC allows you to define dimension variables.

Dimension variables

Dimension variables allow you to calculate energy consumption and display it in reports by means of conclusive units.

Typical examples for dimension variables are:
- Heated area in m^2 which serves to calculate energy consumption per m^2.
- Number of patient beds, which serves to, for instance, calculate energy consumption per patient bed in a hospital.

CC allows you to create to different types of reports, namely **reports on nodes and meters**.

Meter report

Tabular display of the acquired raw data and the derived consumption for an individual meter or a group of meters.

Node report

Evaluation of energy consumption and costs for any given node. The data is displayed in the form of a table or chart.

Note

In general terms, the node report often is referred to simply as a "report".
Consumption Control is an object-oriented program. The meter reports you can create clearly demonstrate CC's high flexibility in terms of electronic data processing:
A specific report template, within the same structure, can be used several times, i.e., for each node.

Example

The "Coolant consumption" report can evaluate *all* data of a specific building as well as all data of a *specific* floor or a *specific* room within this building.

Evaluation is carried out either by:
- Value types (e.g. hot water, cold water, electric energy, etc.)
- Dimension variables (e.g. heated area, number of beds in a hospital, etc.)
- Mixture of value types and dimension variables.

For comparison purposes, you can create relations between energy consumption and costs and other units via the following:
- Setpoints, degree days
- Previous annual values, budget values

Evaluations are displayed on a daily, weekly, monthly, or annual basis.
All evaluations in CC are carried out by daily values that are added up or averaged to weeks (months, years).

2.2.5 Calendar

Calendar

Definition for each day of the year to determine if it is a working day or a holiday [1,2].

CC differentiates between the following to create forecasts:
- Energy consumption on working days (full operation) and
- energy consumption on holidays (reduced operation).

Holidays are days where no one works in a building.
Working days and holidays can also have different basic values.

Important!

Depending on the occupancy type, CC allows you to create several calendars. However, CC requires that at least one calendar be defined.
Typical examples for objects having different usage types or calendars are:
- Administrative buildings
- Sports gymnasiums, sports facilities
- Kindergartens
- Schools
- Swimming pools
- Production facilities

2.2.6 Reference year table

Reference year table

Reference values to forecast consumption in the form of a table by assigning one value per day.

In order to establish long-term evaluations and comparisons, a reference year table must be created containing the average values (e.g. heating degree days) over several years.
Typical examples for reference year tables are:
- Heating degree day values to forecast energy consumption.
- Averaged outside air temperature for a specific year.
- Daily production numbers in a production facility, etc.

2.2.7 Units

To enable CC to perform operating cost and consumption calculations, a unit must be allocated to each variable involved.
Typical examples for units are:

- Degree Celsius (°C)
- kWh
- Beds (e.g. hospital patient beds)
- % etc.

All units are defined in the *Units* table. In CC, you can also define a derived unit for each basic unit. To do this, define the following:

- A conversion factor between the base unit and the derived unit and
- A conversion factor for both units.

The relationship for the conversion can assume the following values:

- **equal to** means that a clear relationship exists between the two units defined by this factor.
  Example: kWh converted to MWh.
- **approximately** means that only a remote relationship exists between the two units approximated by this factor.
  Example: Liters of oil converted to kWh.

2.2.8 Models and curves for forecasting

Why use a forecast model?

- Comparing actual and forecasted consumption allows for properly assessing actual consumption and, as a consequence, for introducing operating measures.
- Reporting periods can then be supplemented with estimates.

Forecast model

Comprises all rules to create a forecast for a certain value type (e.g. heat) in relation to a node (e.g. a specific building).

Forecast models always reference a specific value type and must be allocated to a node.

Restriction

You can use forecast models only within a single dimension.
Typical examples for forecast models are:

- Energy consumption as a function of the seasons (resolution: Day or Month).
- Energy consumption as a function of degree days.
- Energy consumption as a function of the outside temperature, etc..

Curve

Function that extends a forecast model. In forecast models, curves are always used to calculate future consumption:

- In dependence of weather (e.g., outside temperature) or, in other words, as a function of any variable.
- In dependence of the seasons, i.e., as a function of the current month.

In both cases, you can additionally differentiate between working days and holidays.

Important

Forecast models comprise general rules that can be applied to several nodes.
Curves normally comprise node-specific information. They are always assigned to a value type.

The forecast model only contains a formula and possibly the curve type permissible for the respective model. In order to calculate forecasts, the model must be allocated to a specific node and the respective value type. Concrete values can be assigned to the various variables of the model only upon this allocation.

When you want CC to calculate a forecast value, a check is performed to see if the respective node has a forecast model allocated to the associated value type for the desired day. If this does not apply, CC looks for a valid model in the next higher dimension and continues to work with this model.

2.2.9 Calculated values

In reports, the term "calculated values" stands for the following:

- Evaluations between columns or
- Evaluations by means of formulas of forecasts and price models.

2.2.10 General application of the "forecast model" and "price model" concepts

The following generally applies:

Forecast model	**Price** model
Node-based calculation	**Meter**-based calculation

2.3 Access rights: Who can do what?

In order to work with Consumption Control, the access rights apply to the following programs:

1. For CC (only within CC).
- For PDM / ADP (plus for all other ADP/PDM programs opened via CC (meaning PdmExplorer, DataComm, ToolBox, and DataEdit).

2.3.1 Access rights for CC

Access right	Associated rights
1	Call up reports, read values.
2	Enter/change/delete values.
3	Add nodes, enter/change values for nodes, add meters, enter/change values for meters, add media, enter/change values for media.
4	System administrator: Administer dimensions, units, value types, calendar, and reference year tables. Assign reports to dimensions. Assign meters and calculated values to a report column. Use Toolbox. Import reports and templates.
5	"L&S only": Set up the system, create report templates, forecast models, and price models.

2.3.2 Access rights for PDM/ADP

Access right	Associated rights
1	Retrieve reports, upload values from VISONIK, start compression.
2	Enter/load/change values for external data series.
3	Edit reports/templates and create/change/delete external data series.
4	Create/change/delete all data series types. Access all other functions.
5	Save write-protected reports and templates (for standard Building Automation reports and templates).

Access level 5 normally reserved to Building Automation experts only.

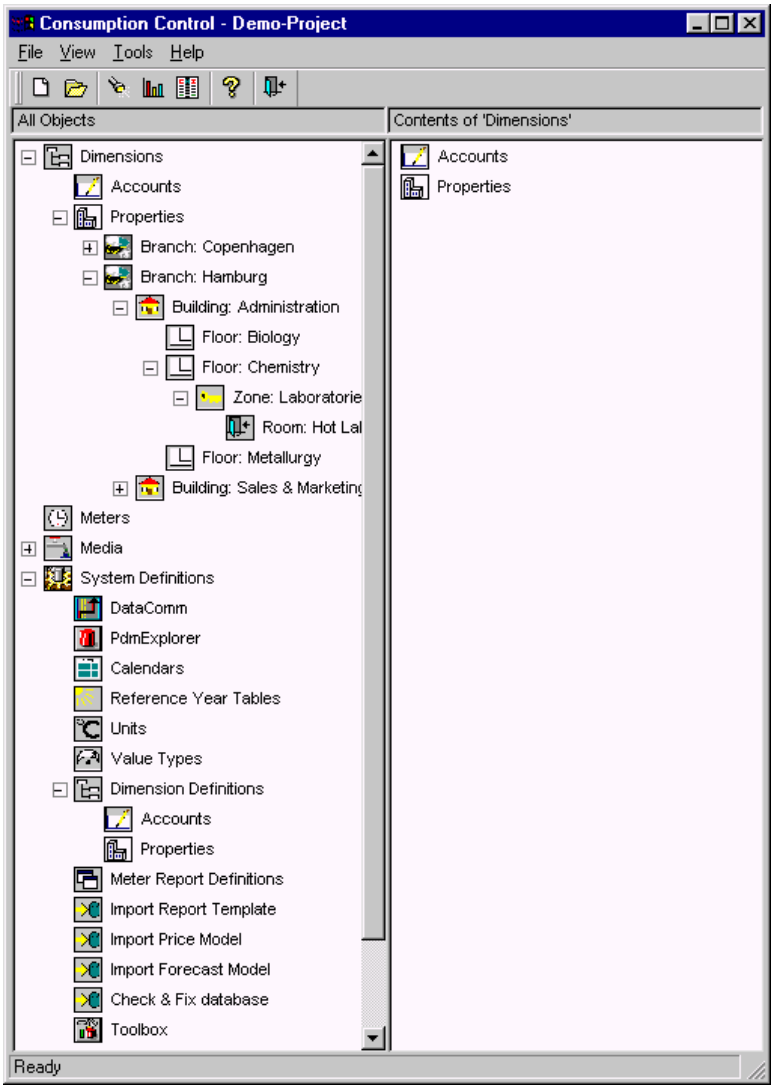
3 Starting the program

3.1 The Start window

Start window

After starting the program, the following window opens in CC:
This window is always referred to as the **Start window** .

The **left section** of the Start window contains all entry points to objects and functions provided by Consumption Control.
The **right section** of the Start window contains all objects assigned to the object selected in the left section.



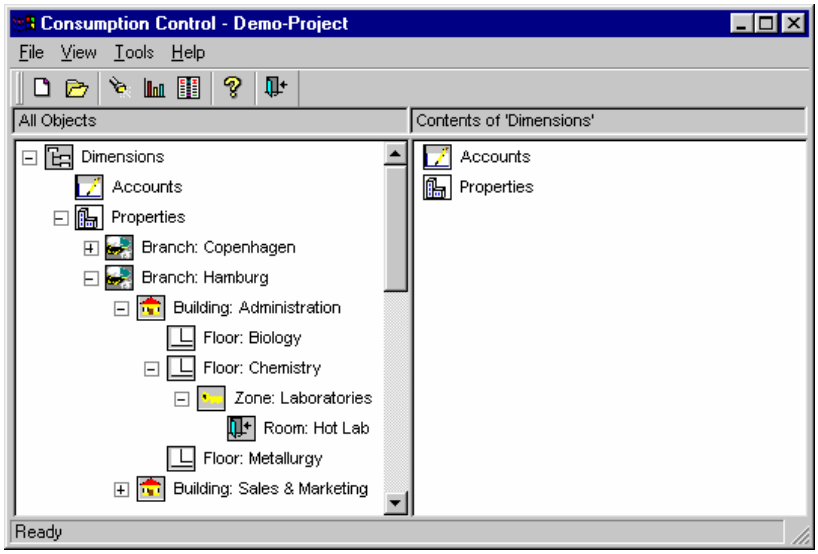
8713o01aen: The *Start window*

Tip

Refresh the window after you have made major changes. To refresh, press **F5**.

3.2 Opening/closing the Start window folder

When you click the characters "+" or "–" in the left portion of the window, you can expand or collapse the individual folders.

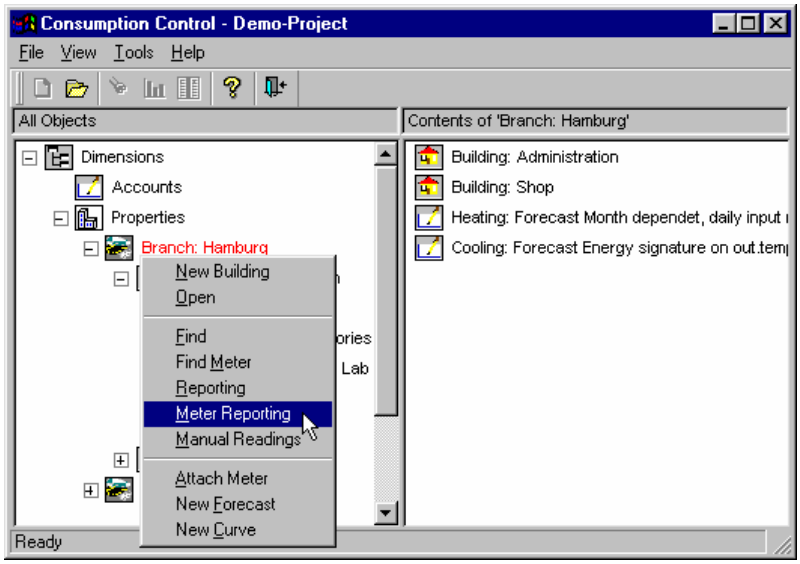


8713o02en: The *Start window* with expanded folders

3.3 Starting the CC function

Consumption Control is an object-oriented program:

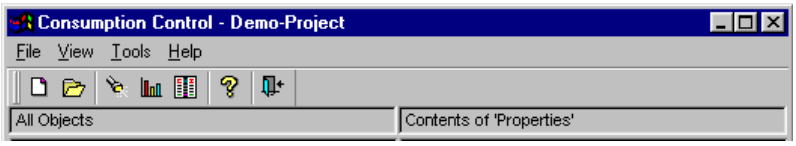
- Thus, select an object (building, floor) and
- then right-click to open the context menu. Select the command from the context menu that you want to execute, e.g., "Start report" or "Assign meter". The commands available in the context menu depend on the currently selected object.



8713o03en: The *Start window* with context menu

3.4 Menu bar and toolbar

3.4.1 The CC menu bar



8713o04en:*Start window* with menu bar and toolbar

File

New: Opens a dialog box in the Start window to enter a new object for the type currently highlighted.
Open: Opens the node currently selected in the Start window.
Close: Closes Consumption Control.

View

Large Icons: Displays large icons in the Start window.
Small Icons: Displays small icons in the Start window. We recommend the Small Icons setting if you want to simultaneously display a large number of icons on the screen.
Toolbar: Opens the dialog box with the display options.

Options

Find: Helps you find meters and nodes.
Reporting: Opens the *Reports for:* dialog box for the currently selected object.
Manual Reading: Opens the *Manual Readings for:* dialog box for the currently selected object.

Help

Help: Opens online help.
About: Shows the current version of Consumption Control.

3.4.2 The Consumption Control toolbar

New Object	Opens a dialog box to create a new object for the type currently selected.
Open Object	Opens the selected object.
Find Object	Opens a dialog box that helps you find an object for the current type, e.g., node or meter.
Start Report	Opens the *Reports for:* dialog box for the selected node.
Manual Reading	Opens the *Manual Readings for:* dialog box for the selected object.
Help	Opens online help.
Exit	Closes and exits Consumption Control.

3.5 Sorting, filtering, and finding

In lists (meter list, node list, etc.), the context menu (right-click) allows you to either sort entries by columns, filter entries by using complex criteria, or run searches.

Tip

Sorting and filter criteria remain available after restarting CC. This is especially useful when entries appear to be missing: In this case, click "Reset Filter".

4 Dimensions

4.1 What are they?

A dimension is one of the key elements in Consumption Control.

Dimension **Subdivision of an organizational unit into hierarchically structured subunits.**

Level **Hierarchies within a dimension**

Node, object **Subunit of a level**

For example, real estate property objects can be considered an organizational unit. The subunits then are, for example, building, floors, rooms, etc..

Important A dimension greatly influences the creation of reports, as reports must always relate to one of the subunits.

In CC, several freely definable dimensions can simultaneously be created. This enables you to optimally adjust CC to your needs.

Note From CC V3.0, forecast models are possible for all dimensions.
Typical CC dimensions are:

- Building: This represents the most commonly used dimension with various hierarchical levels such as properties, buildings, floors, etc.
- Organization.
- Cost center.

When printing reports, you must first designate the node, i.e., the room, floor, etc., for the data to be displayed. Once the dimension is defined, all nodes referred to by reports are also defined.
Energy data are acquired by meters. Meters are assigned to one specific dimension within each node. However, a meter may be assigned to several dimensions.

Note Each dimension may comprise its own levels, dimension variables, and dimension-specific reports.

4.2 Preparatory work

Proceed as follows to create a new dimension:

- Create a new dimension.
- Define all dimension variables for the reports of this dimension.
- Define all levels of this dimension.
- Determine the associated text fields for each level.
- Define all nodes within the dimension.

4.2.1 Preparatory work on part of the system administrator

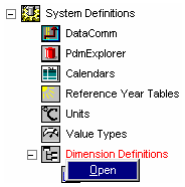
- Create a new dimension.
- Determine all dimension variables for the reports of this dimension.
- Define all levels of this dimension.
- Define all text fields for each level.

4.3 Creating a new dimension

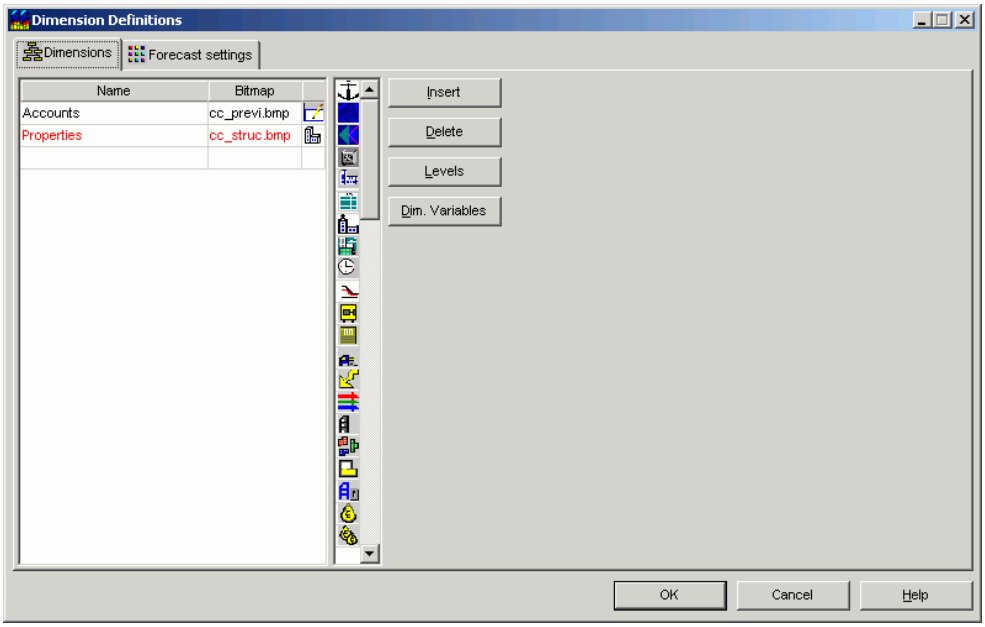
4.3.1 Dimensions: The "Dimensions" tab

In the *Start window*

Select: **SYSTEM DEFINITIONS | DIMENSION DEFINITIONS | double-click** (or right click | Open)



8713o05en



8715o06aen: The *Dimension Definitions* dialog box — *Dimensions* tab

Bitmap/scroll bar for bitmaps

Bitmap file used as a symbol to display the dimension in the *Start window*. When you select the symbol from the scroll bar, the corresponding file name is inserted automatically.

Note

You can use the *.bmp files in the PDM-ADP\BMP folder whose file name starts with CC.

Paste

Inserts an empty row in the dimensions list.
This enables you to create a new dimension.

Delete

Deletes the selected dimension.

Note

In order to delete a dimension, you must first delete all associated dimension variables and levels! CC prompts you to confirm your choice and further checks any integrity conditions to ensure that you do not mistakenly delete a dimension.

Levels

Opens the *Level for:* dialog box.
This is where you define the levels associated with the dimension (e.g. buildings, floors, etc.).

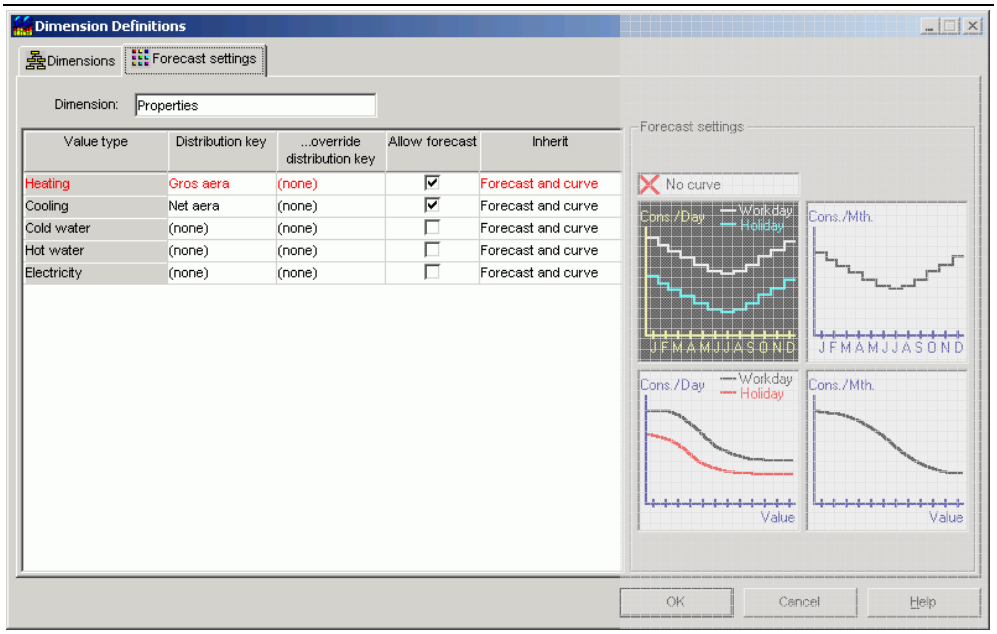
Dimension variables

Opens the *Dimension variables for:* dialog box.
This is where you define the dimension variables associated with the dimension (e.g. area, number of beds, etc.).

OK, Cancel, Help

Standard Windows functionality.

4.3.2 Dimensions: The "Forecast" tab



8715o06ben: Excerpt of the *Dimension Definitions – Forecast settings* tab

Forecast

The "Forecast" tab applies only to the active dimension.
Changes to another dimension level must be made by clicking the corresponding dimension row in the "Dimensions" tab.

Value type

Here you can see the dimension variables for the respective dimension ("Dimensions" tab).

Distribution keys

These fields allow you to assign dimension variables if you want to define a forecast for the entire building.

Important!

The distribution fields 1 and 2 must contain dimension variables with matching physical units (e.g., m^2).

Distribution key

Select one of the dimension variables from the drop-down list box if you want to define just *one* forecast for the entire building. Based on this dimension variable, superposed consumption is allocated (meter values) to lower nodes (without consumption acquisition (=without meter) within the associated value type).

Dimension variables for example can be gross area, net area, number of beds, etc.

Override distribution key

This box is used to override the Distribution key field. This may become necessary if a portion of the building requires more energy than other comparable areas. For this purpose, you can, for example, use a dimension variable named "Heating billing area".

Allow forecast

If this check box is selected, you can link the respective value type to the forecast.

Note

- *You can select Allow forecast* only if at least *one* forecast model was previously defined.
- The area to the right of the "Forecast Settings" is available only if the check box is selected.

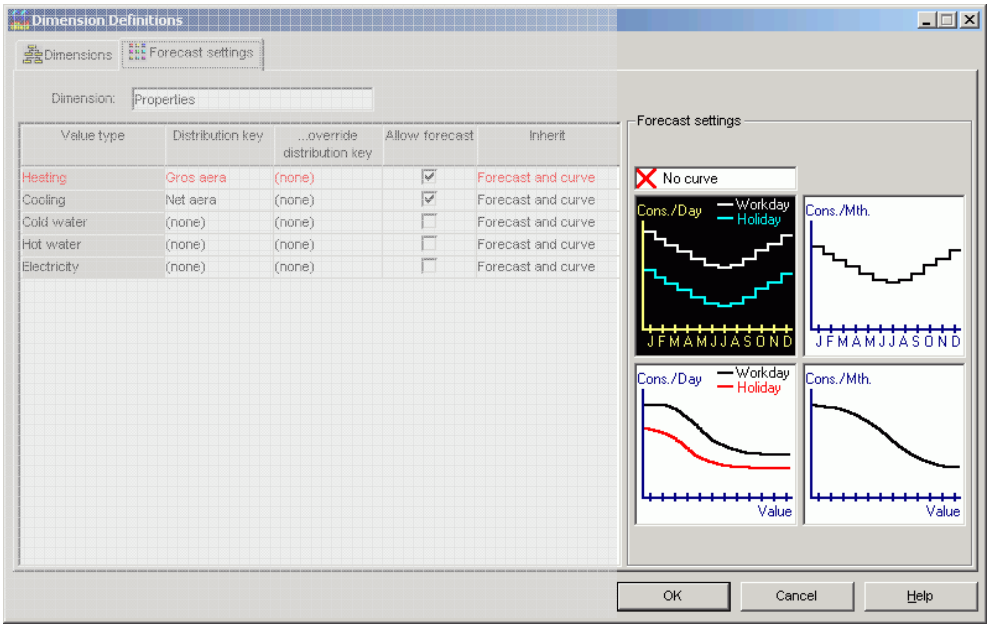
Inherit

Insert a missing forecast or curve from the next higher node.

Note

If the information is missing in the next higher node, the system goes on to the next higher node, etc..
The drop-down list box allows you to select/clear a forecast with the options

- None (no forecast)
- Forecast
- Forecast and curve



8715o06ben: Excerpt of the *Dimension Definitions – Forecast settings* tab

Forecast settings

Select the type that best matches the **forecast**.

No curve

"No curve" is selected if the forecast model does not consider any of the four curve types described below.

Cons./Day

(Bottom left): The forecast model is tied to the month and distinguishes between workdays and holidays.

Cons./Day type

(Top right): This forecast model is tied to the month and does not distinguish between working days and holidays.

Cons./Mth

(Bottom left): This forecast model is tied to values and distinguishes between working days and holidays.
For instance, this type of value is from a heating-degree-days-table.

Cons./Mth.

(Bottom right): This forecast model is tied to values and does not distinguish between working days and holidays.

Note

You can only select a curve type if at least *one* model was defined using the associated curve type.

4.3.3 Creating a new dimension

Step-by-step procedure

Start window

1. Open the System Definitions window.
2. Open the Dimension Definitions dialog box.

Dimension Definitions dialog box:

Dimensions tab

3. Click **[Insert]** to insert a new row.
4. In the *Name* column, type in the name of the new dimension.
5. In the *Bitmap* column, double-click the desired symbol.

Forecast tab

6. In the *Allow forecast* column, select the check box for the value type(s) you want to use to link the forecast within this dimension.
7. In the *Override distribution key* column, select the desired dimension variable (or none).
8. In the *Inherit* column, select a function or none. If you select a function, select the function type (forecast or forecast and curve).

Dimensions tab

9. Define all dimension variables for the reports of this dimension.
10. Define all levels for this dimension.
11. Define all text fields for each level.
12. Define all nodes within this dimension.

4.4 Creating dimension variables for a dimension

Dimension variable

Element used to calculate energy consumption to create meaningful units and to display the consumption in reports.

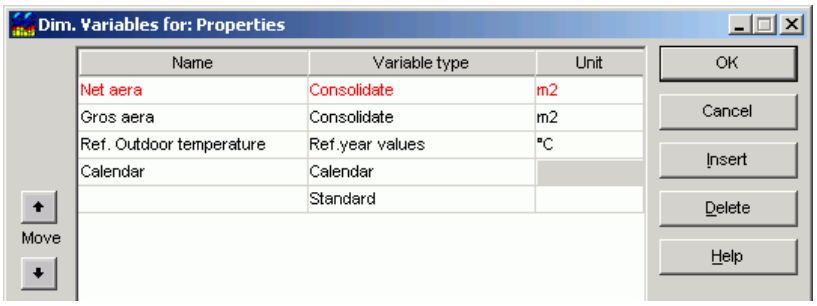
Typical examples for dimension variables are:
Heated area in m^2 which serves to calculate energy consumption per m^2.
Number of patient beds, which serves to, for instance, calculate energy consumption per patient bed in a hospital.

Note

Dimension variables are important elements for creating meaningful reports. They can be defined as needed. This enables you to optimally adjust CC to your needs.

Select:

In the *Dimension Definitions* dialog box
SYSTEM DEFINITIONS | DIMENSION DEFINITIONS | [Dimension Variables]



8715o08en: The *Dimension Variables for:* dialog box (excerpt)

Name

Name of the dimension variable. This name allows you to later select this dimension varile for the 'Report definition'.

Calendar	**General calendar:** All dimension variables have a "Valid from" date range. **No connection:** Values entered in a node for this dimension variable apply to this node only. **Consolidate:** That dimension variable is displayed as consolidated at the next higher dimension level. This is meaningful, for example, to display the entire area of a property which is calculated from the subareas of the lower dimension levels. **Ref. year values**: This dimension variable has a drop-down list box containing all reference year tables available in the system. **Calendar:** This dimension variable has a drop-down list box containing all calendars as defined in the system.
Unit	Unit of the dimension variable.
Insert	Inserts an empty row in the dimension variable list which allows you to define a new dimension variable.
Arrow up Arrow down	Change the order of entries. The selected entry can be moved up or down in the list.
Delete	Deletes the selected dimension variable. CC prompts you to confirm your choice and further checks any integrity conditions to ensure that you do not mistakenly delete a dimension variable.
Save, Cancel, Help	Standard Windows functionality.

4.5 Creating dimension levels

Level

Subdivision of dimension into hierarchically structured units.

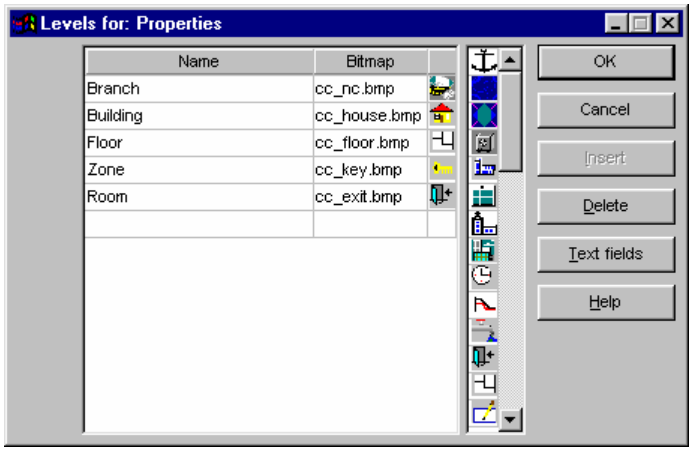
Typical levels are:

- Real estate: Property, building, floor, zone, and room.
- Organization: Business area, production area, department.

After creating a new dimension by entering a name and selecting the bitmap file in the *Dimension Definitions* dialog box, you can proceed by defining the associated levels.

In the *Dimension Definitions* dialog box

Select: **SYSTEM DEFINITIONS | DIMENSIONS | [Levels]**



8713o09en: The *Levels for:* dialog box

Name	Name of the level. Please note that the order of entry in the dialog box defines the hierarchy order.
Bitmap/scroll bar for bitmaps	Bitmap file used as a symbol to display the levels in the *Start window*. When you select the symbol from the scroll bar, the corresponding file name is inserted automatically.
Text fields	You can define text fields containing additional information for each level within a dimension.
Insert	Inserts an empty row in the list of levels. This allows you to now define a new level. Note: When nodes are defined on a sublevel, a node automatically named by the system is inserted. You must then rename the node and enter the dimension variables.
Delete	Deletes the highlighted level. CC prompts you to confirm your choice and further checks any integrity conditions to ensure that you do not mistakenly delete a level.
Save, Cancel, Help	Standard Windows functionality buttons.

4.5.1 Creating a new level

Step-by-step procedure

Start window

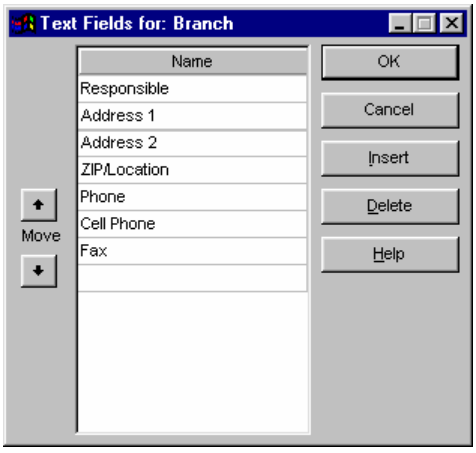
1. Open the System Definitions window.

2. Open the Dimension Definitions dialog box.

Dimension Definitions dialog box:

Dimensions tab

3. In the *Name* column, type in the name of the new level.
   (The order in which you enter information in this dialog box defines the final order in the hierarchy).
4. Double-click the desired symbol in the *Bitmap* column.
   (The file name of the bitmap file appears in the *Bitmap* column; the symbol is displayed to the right).
5. Click the [Text field] and define it.
   (You can define one text field with additional information for each hierarchy level within the dimension). These text fields can be displayed in reports.



8713o10en: The Text fields for: dialog box

6. Repeat the above procedure for each level.

4.6 Creating a new node

The system administrator first does the following:

- Creates a new dimension.
- Defines all dimension variables for the reports of this dimension.
- Defines all levels of this dimension.
- Defines the associated text fields for each level.

The user then

- defines all nodes within each dimension.

4.6.1 Opening the dialog box to create a new entry

Node

Individual objects within the dimensions and levels.

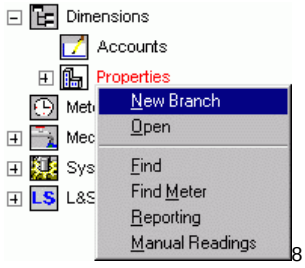
Note

Reports are always defined in general terms, but when printed, they always reference a specific node.
Typical nodes are for example:

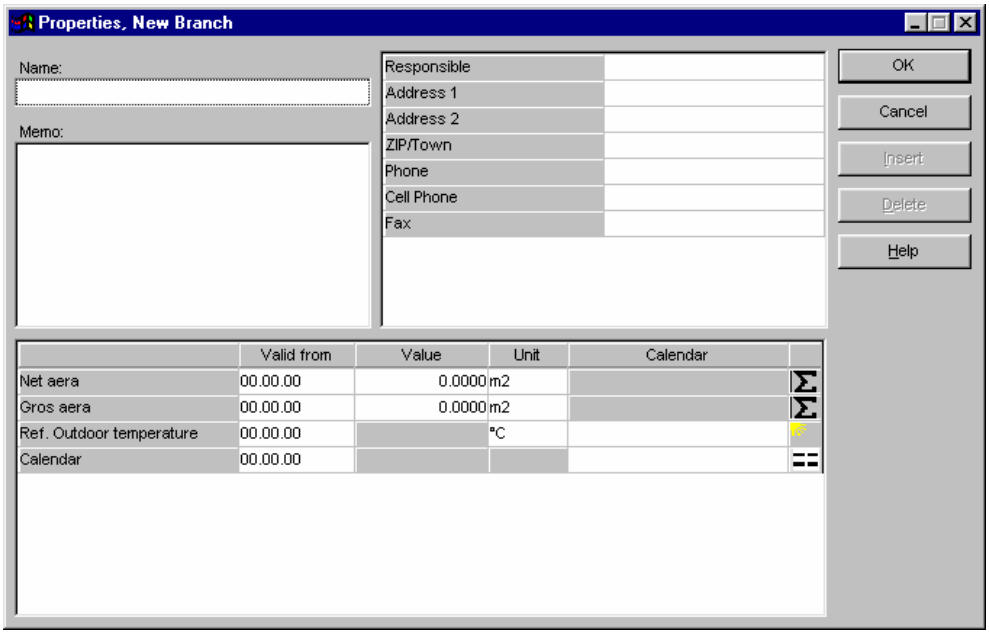
- Within a building: Floor 1, Floor 2.
- On a floor: Room A, laboratory, class room Z.

In the *Start window*

Select: **DIMENSIONS | BUILDING DIMENSION | Right-click | NEW PROPERTY**



713o11en



8713o12en: The *Properties, New Branch* dialog box

Top half of dialog box

Name — The name you selected for this property. This is a mandatory field.

Memo — This is an optional text field. You can save additional, important information on the respective object in this field.

Note

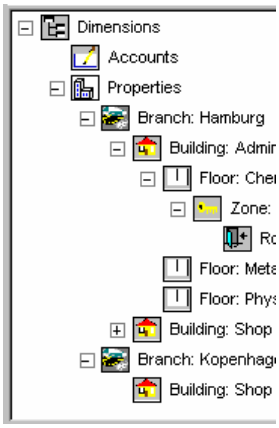
In order to separate the rows, you have to use the key combinations <Ctrl + Enter>.

Top right: Shaded (gray) names for rows — The names that were previously defined in the dimension level as text fields are displayed here.

Bottom half of dialog box

Bottom left: Shaded (gray) names for rows	The names you defined in the dimension variable definition are displayed here.
Valid from	The **date** after which the displayed value of the **dimension variable** will be used for further calculations. Dimension variables can have several, differing values. These values always carry the start date for validity. The associated **end data** is derived automatically from the start date of the new value.
Value	Current, numerical value of the dimension variable for this node. For consolidated dimension variables, enter only a part of the node, e.g., floor area = hallway and stairwell, number of beds on floor = 0.
Unit	Unit of the displayed dimension variable. The available units are defined in the "System Definitions | Units" menu.
Calendar	The calendar type of reference year table defined for the associated dimension variable.
Bottom right: Links	If a dimension variable has the "Standard" value type, no link is active. A blank field thus is displayed. If the dimension variable has value type "Consolidate", the sum is calculated from the current node and all subnodes when you click this symbol. If the dimension variable is of value type "Ref. year values", the associated reference year value table is displayed when you click this symbol. If the dimension variable is of value type "Calendar", the associated calendar is displayed when you click this symbol.
Insert	The functionality of this button depends on the respectively open dialog box. If the cursor, for instance, is in the reference variable row, clicking this button inserts a new row enabling you to enter two date ranges for one value.
Delete	The functionality of this button depends on the respectively open dialog box. • The node is deleted if the cursor is located on the node name. • The row is deleted if the cursor is located on a dimension variable row. CC prompts you to confirm your choice and further checks any integrity conditions to ensure that you do not mistakenly delete a row or a node.
Save, Cancel, Help	Standard Windows functionality buttons.

Example for creating nodes



8715o13en:
Excerpt from the *Overview* window

In this example as in many others in this documentation, we will use the **Building Dimension** dimension. Let us assume that you want to create a property called **Institute** with the building **Research**, the floor **Chemistry**, the zone **Lab Facility**, and the room **Hot Lab**.
You will learn how to create:

- the Institute property,
- the Research building, and
- further nodes (floor, zone, room).
- You will assign a node to a meter, and
- create nodes by copying them.

4.6.2 Creating the *Institute* property

Step-by-step procedure

Start window

1. Open the Dimension Definitions tree.
2. Right-click the "Property" symbol.
   The context menu opens.
3. Select NEW PROPERTY.
   The *New Property* dialog box opens.
4. Type in "Institute" in the *Name* field.
5. In the "Net Area" row, click the *Valid from* field. Enter the date from which this net area is to be valid.
6. In the same row, enter the entire net area for the property in the "*Value"* field (provided this is not a consolidated value).
7. In this example, the following dimension variables must also be considered: "Outside air" and "Calendar".
   - 7.1 In the "Outside temperature" row, click the *Calendar* field.
   - 7.2 Select one of the reference year tables from the drop-down list box.
   - 7.3 Enter the date in the *Valid from* field from which the reference year table is to be considered for calculations.
8. (Optional) Check the reference year table by clicking the symbol.
9. In this example, the following dimension variables must also be considered: "Outside air" and "Calendar".
   - 9.1 In the "Calendar" row, click the *Calendar* field.
   - 9.2 Select a calendar that corresponds to the node from the available drop-down list box.
   - 9.3 Click the *Calendar* symbol.
   - 9.4 In the "Calendar" dialog box, select the calendar you want to use for future calculations.
10. To save your settings, click **[Save].**

4.6.3 Creating the Research building

Note

The level below the property is the building level. Follow the below procedure to create a node for the new building.

Step-by-step procedure

Start window

1. Select Dimension in the Explorer.
2. Select Property in the Explorer.
3. Right-click the "Institute Property" symbol.
   The context menu opens.
4. Select NEW BUILDING.
   The *New Building* dialog box opens.
5. Type in "Research" in the *Name* field.
6. Type in all required parameters.
7. To save your settings, click **[Save].**

4.6.4 Creating further nodes

Repeat the above procedure for all other lower levels and nodes.

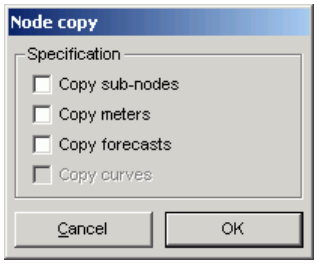
1. Name the floor within the research building **"Chemistry".**
2. Name the zone on the chemistry floor **"Lab Facility".**
3. Name the room within the lab facility **"Hot Lab".**

4.6.5 Copying to create nodes: Creating the Development building

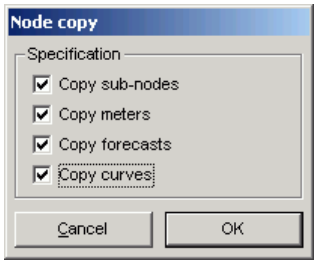
Step-by-step procedure

Start window

1. Select Building: Research in the Explorer.
2. Right-click the "Building: Research" symbol.
   The "Copy Nodes" dialog box opens.
3. Select all necessary links (default setting: all cleared).



8715o97a
Default setting: All check boxes cleared



8715o96b
Recommendation: Select all

4. Click **[OK].**
5. Right-click the next higher node "Property:Institute".
   The context menu opens.
6. Select *Insert Building*
   (a copy of the "Research" building is added).

Levels

7. Change the levels (lower nodes) as desired.

Important – 1

Name *each* new node differently to allow Autoreport to call up separately each node. If you must use same names, number the nodes, e.g., Building: Development (1), Development (2a), Development (2b), etc..

Important – 2

If you selected *Copy meters,* and if a "Manual Reading" was added, CC assigns a new external data series to this meter, provided the number of licensed data series is not exceeded.

4.6.6 Assigning a node to a meter

Follow the procedure below to assign a meter to an object within the structure, i.e., to the node:

Step-by-step procedure

Start window

1. Open the context menu for the desired object.
2. Select **ASSIGN METER.**
   The *Meter* dialog box opens.

Meter dialog box

3. Select the meter you want to assign to the object.
4. Click **[Select}**.
   The meter is assigned to the object.

Note

If not all (expected) meters are visible, open the context menu in the meter field ( ) and click "Reset".

In order to cut the link between a meter and a node, select **REMOVE METER** from the respective meter object's context menu.

5 Meter

5.1 What is it?

Meters have a key position in CC, as they supply the information which we later process, compare, and use for forecasts.

The concept of meters

CC differentiates between:

- **Physical meters**: They are responsible for actual data acquisition in the facility. They, for example, measure water consumption in liters, oil consumption in tons, energy consumption in kWh, or even static values such as outside temperature.
- **Logical meters**: Internally, CC only works with logical meters. Logical meters are characterized as follows:

They have a **Name**.
They belong to a specific Value Type.
They belong to a specific Flow Nature.

Logical meters derive their meter data from:
Physical meters (via the building automation and control system).
From manual data entry (manual reading).
From virtual meters (calculation from other meters by means of a formula).

Advantages of this concept

- **Physical meters** may change over time.
- A defective meter is exchanged and replaced by another product or by e.g., a PDM meter, etc..

The logical meter in this case does not change. The only information required is the date range for which the physical meter was responsible. The value type and the flow nature both represent key elements in CC.

Value type

Element to summarize logical meters measuring similar types of consumption into one group.
Result: Subsequent report evaluation of energy consumption is primarily based on these value types.
Typical examples for value types are:

- Heating energy
- Electricity (high tariff/low tariff)
- Cooling energy
- Chilled water

Note

Do not confuse the term value type with the term medium. A medium (e.g. oil or gas) is consumed to produce a value type (e.g. heating energy).

Flow nature

- **Production (meter)**
  This type of meter measures a medium output for generation purposes such as the amount of gas which is passed to a central heating boiler (for generation purposes).

- **Distribution meter**
  This type of meter measures a distributed medium such as the amount of hot water distributed by the central heating boiler.

- **Consumption (meter)**
  This type of meter measures consumption at the location where the energy or any other medium is consumed.

- **Other (meters**)
  Other meters denote meters for all other flow natures, for instance, to acquire data of an access control system or outside temperature, etc.

Important

Each meter **must be** assigned to one of the four flow natures because one or several flow natures can be used for calculation upon subsequent report creation.

Important

In this chapter, we often mention the context menu (right-click) and the commands "Sort", "Filter" and "Find":

- **Sort** opens a dialog box that allows you to enter criteria to sort the listed meters.
- **Filter** opens a dialog box that allows you to specify criteria to display only the meters that match the filter.
- **Find** opens a dialog box that allow you to enter criteria to find a specific meter.
  The *Find and Sort* commands are especially useful when a large number of meters exists in the system.

If, after using a filter, not all meters are listed that you expected to see, click [Delete Filter]. This deletes all filter criteria and displays all meters added to this node.

5.2 Preparatory work

Do the following to create a logical meter:

- Define the units (see chapter 11, Units).
- Define the media (see "Defining a new medium").
- Define the value type.
  If you intend to later assign the associated value type to a "Forecast model with curve", you must also define the permissible curve type.
- Create a node (see "Creating a new node").
- Create the meter.

5.2.1 Preparatory work carried out by Building Automation

- Define the forecast models.
  For value types: Siemens Building Technologies ensures that the forecast model, which will later be assigned to the selected value type, references the correct curve type.

5.2.2 Preparatory work on part of the system administrator

Before a new logical meter can be created, the following must be defined:

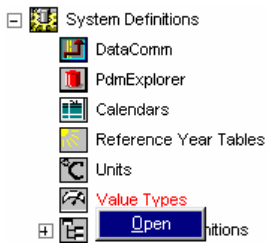
- Units
- Required value types.
- Dimensions.
- Additionally, forecast models may need to be imported.

5.3 Creating a new value type

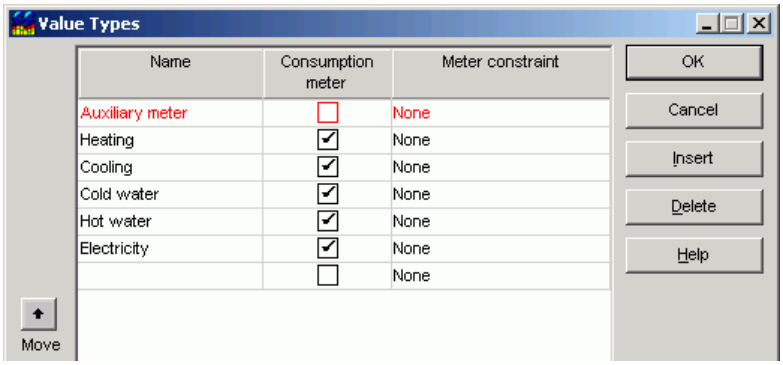
5.3.1 Opening the Value Type dialog box

In the *Start* window

Select: System definitions | Value Types | double-click (or right-click | Open)



8713o14en



8713o15en: The *Value Types* dialog box (excerpt)

Name — Name of the value type. You cannot use the same name twice.

Consumption meter — Check box indicating if the value type is used to evaluate meters. Do not select this check box if the value type is used for outside temperature and similar values.

Meter restriction — This drop-down list box allows you to select the following:

- None (no restrictions).
- Max. 1 meter per node.
- Max. 1 meter per value type.

Insert — Inserts an empty row in the value type list.
This enables you to define a new value type.

Delete — Deletes the selected value type. CC prompts you to confirm your choice and further checks any integrity conditions to ensure that you do not mistakenly delete a value type.

Save, Cancel, Help — Standard Windows functionality.

5.3.2 Creating a new value type

Step-by-step procedure

Start window

1. Make sure that a suitable forecast model exists.
2. Open the System Definitions dialog box.
3. Open the Value Types dialog box.

Value Types dialog box

4. Right-click the symbol or *Value Type* and click [Open].
5. In the *Value Types* dialog box, click [Insert].
   A new row is inserted above the selected row.
6. Type in the name for the new value type in the *Name* column.
7. In the *Consumption meter* column, make sure the check box is selected if you want to use the new value type for consumption meters.
8. Open the drop-down list box in the *Meter Restriction* column and select the required filter.
9. To save your settings, click **[Save].**

5.4 Creating a logical meter

After the **system administrator** has defined all units, value types, and the associated structures, the **user** must create the logical meter.

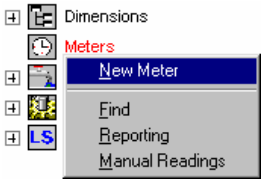
5.4.1 Opening a dialog box to make a new entry

Select:

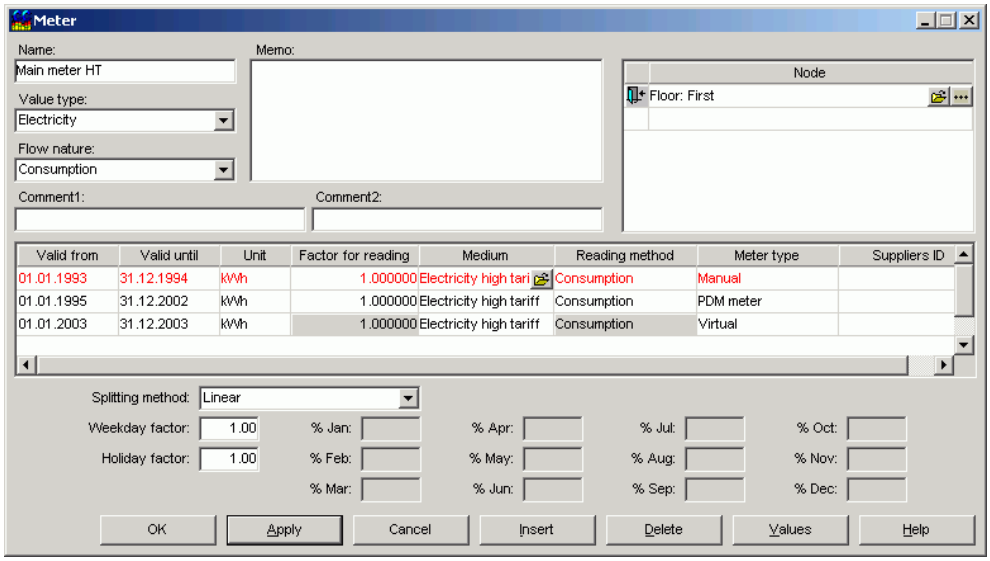
In the *Start* window
METER | right-click | NEW METER
CC then opens an empty dialog box for your new entry.

Note

For reasons of clarity, the pictures below show a dialog box with an existing meter instead of an empty dialog box.



8713o16en



8715o17en: The *Meters* dialog box

Text fields in the top half

Note

Text fields in the upper section of the dialog box apply to all flow natures.

Name

Name of the logical meter. This information is mandatory.

Value type

Assignment of the meter to a value type (mandatory entry).

Flow nature

This is a drop-down list box containing the options Production meter, Distribution meter, Consumption meter, and Other meter (mandatory entry).

Memo

This is an optional text field. Use this field to enter meter-specific information. Note: Press <Ctrl Enter> to insert a new row in this field (Windows standard).

Node

This field displays all nodes (building, room, etc.) to which the meter is linked.

Selection

Clicking [Selection] opens a dialog box with all available nodes to allow you to select the desired node.

Note

- To link the meter to other nodes, click [Insert], [Selection].
- To delete a row, click the respective row, and then click [Delete].

Open dialog

Clicking the Selection opens the dialog box with the User Dimension: *New (e.g. property)* entry in the Explorer.

Comment 1
Comment 2

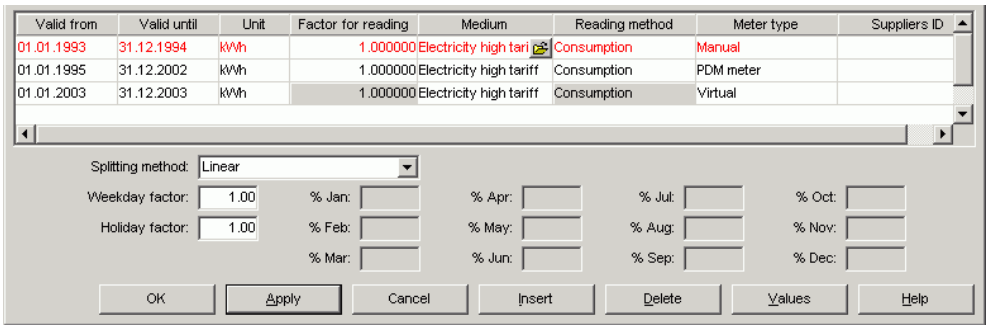
The *Comment 1* and *Comment 2* fields allow for additional text entries. These fields allow you to add explanatory information to, e.g., a meter without using the field *Memo*

Tip

Use these fields to enter advanced criteria for the Sort, Filter, and Find functions.

Text fields in the middle of the dialog box

The display of the **middle section of the dialog box** depends on the selected flow nature (current physical meter or selected meter).



8715o17en: The *Meters* dialog box (excerpt)

Valid from, Valid until

Range of validity for the meter. This information is mandatory.

Unit

Drop-down list box with all available units (°C, liter, etc.) for the meter.

Factor for reading

Conversion factor if the meter reading does not correspond to the unit.

Medium
Selection

Drop-down list box with all available media (e.g. water, gas).
Opens the *Medium* dialog box for the selected medium.
Same functionality as for *Medium and Price – New Medium*).

Note

- The button only appears in the selected row.
- The dialog box appears only if you select a medium in the corresponding field.

Reading method

Reading method: Newly acquired values are accumulated in the meter, i.e., the meter reading increases until the upper limit is reached.
Consumption: Meter shows the difference to the last reading.

Note

CC calculates the daily consumption for both data input types for report creation.

Meter

Manual readings	The meter receives manually entered data.
Meter via PDM	A system automatically acquires the PDM meter values.
Virtual	The meter data required are not acquired but derived from data of other meters.

Note

The contents of *Meter* this field determine the format of the bottom half of this dialog box.

Supplier ID

This text field allows you to enter the supplier's identification for the physical meter.

The buttons at the bottom of the dialog box
(valid for all flow natures)

8715o17en: The *Meters* dialog box (excerpt)

OK

Saves the entered/modified parameters for this meter. This dialog box is closed immediately after saving.

Apply

Saves the current state of the entered/modified parameters for this meter without closing the dialog box after saving.

Insert

Inserts a new row to enter insert a new physical meter, provided the cursor points to one of the rows in the middle of the dialog box (where different physical meters are defined for various time ranges).

Delete

Deletes the meter.
CC prompts you to confirm your choice and further checks any integrity conditions to ensure that you do not mistakenly delete a meter (see next section).

Show Values

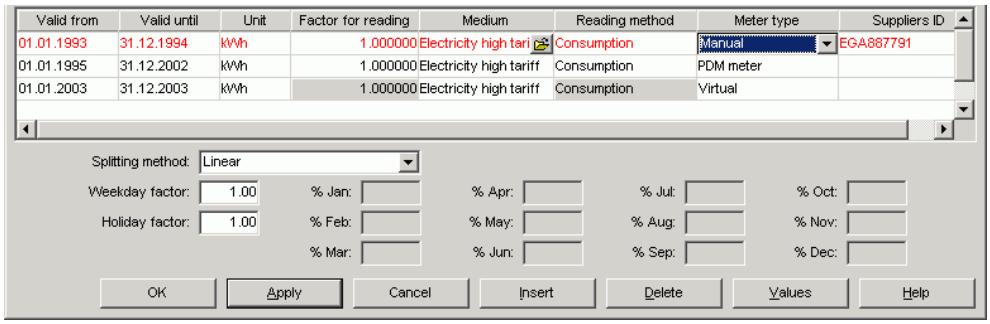
- Within **PDM meter**, the *DataEdit* dialog box opens to allow you to edit, newly enter, and delete data.
- Within **Manual Meter**, the *Manual Reading for:* dialog box opens to allow you to edit, newly enter, and delete data.

Cancel, Help

Standard Windows functionality.

Text fields valid only for flow nature "Manual".

Alternative display with selected flow nature "Manual".



8715o18en: The *Meter* dialog box with selected *Manual Reading* flow nature (excerpt)

Splitting method

…if daily values are not available:
Linear means that the values between two meter readings are distributed equally over 30 days between the manual readings. The distribution can additionally be weighted with regard to working day and holiday factors.
Forecast means that the values between two meter readings are distributed according to a possibly existing forecast model.
Distribution key applies freely selectable, monthly percentage points to distribute the values over one full year.
The distribution can additionally be weighted with regard to working day and holiday factors.

Working day factor, Holiday factor

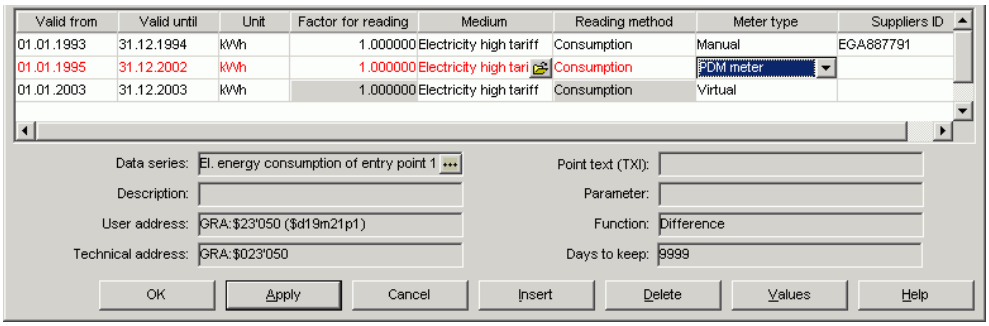
Only for the "Linear" and "Distribution key" options.
Defines the weighting of working days and holidays with regard to distribution of the registered data. Only the ratio of the two numbers and not the absolute amount is important.

Monthly fields

Distribution by percentage points of the registered data, provided the data is distributed according to a distribution key.

Text fields valid only for flow nature "Meter via PDM".

Alternative display with selected flow nature "Meter via PDM".



8715o19en: The *Meter* dialog box with selected *Meter via PDM* flow nature (excerpt)

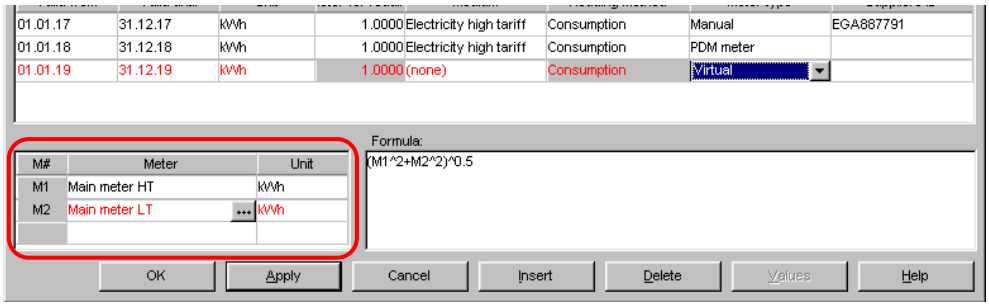
Data series, Description, User address, Technical address, Point text, Parameter, Function, Days to keep

These fields describe a meter point registered via the associated building automation and control system and saved in the PDM database.

In the **Data series text field**, the "Data Series" dialog box providing the "*VISONIK Data Series", "External Data Series",* and *"Constants"* tabs can be opened by clicking ... . This dialog box allows for selecting a meter or a constant.
All other fields are completed automatically and the display is adjusted to the associated selection (see chapter 5.5 – Saving your settings).

Text fields valid only for flow nature "Virtual".

Virtual meters are meters whose values are not read but calculated from other variables.
Alternative display with selected flow nature "Virtual".



8715o20en: The *Meter* dialog box with selected *Virtual* flow nature (excerpt)

Meter dialog box

Selection of meters. *Gray* designators can be used.

Meter

Enter the real meters in "Meter".

- To do this, click ... to open the "Meter" dialog box.
- For subsequent changes to the linked meters, click *Dialog* to open the "Meter" dialog box for the corresponding meter.

Unit

Select the desired ***Unit*** from the drop-down list box or the virtual meter. If the meter's original units differ, CC automatically converts them to the target unit *prior* to report calculation, e.g., M1 (m^3), M2 (l/min) to M1 (kWh), M2 (kWh).

Important

The target unit ***must*** be the same for all meters in the formula.

Formula

Calculations using the meters

Example: (M1^2+M2^2)^0.5 corresponds to $\sqrt[2]{M1^2 + M2^2}$.

The following operands can be used:

Operand	Meaning	Remarks
+	Add	"Hard" addition: If no meter value is available for an addend, value 0 is output. The report then shows that at least one value is missing.
(+)	Add	"Soft" addition: All addends with available meter values are used; addends without values thus add 0 to the sum.
–	Subtract	–
*	Multiply	–
/	Divide	–
^ (=1)	Raise to a power	Exponent for power n.
^ (<1)	Root	Degree of the room (as in $b^{1/n}$).
if then ... else endif	Condition	The condition must be concluded by "endif".

5.4.2 Creating a new, logical meter

Step-by-step procedure

Start window

1. Right-click the *Meter* symbol.
2. Select *New Meter.*

Meter dialog box

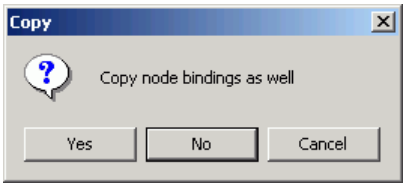
3. Type in the logical name of the new meter in the *Name* field.
4. Open the *Value type* drop-down list box and select a value from the list.
5. Open the *Flow nature* drop-down list box and select a value from the list.
6. Link the new meter to a node in the building structure by clicking an empty row in the *Link to* field and selecting the desired node from the displayed list.
7. If necessary, type in descriptive text in the *Memo* field.
8. In the fields *Valid from* and *Valid until* enter the date range for each physical meter.
9. Open the *Unit* drop-down list box and select a value from the list.
10. Where applicable, type in a factor for readings.
11. Open the *Medium* drop-down list box and select a value from the list.
12. Open the *Reading method* drop-down list box and select a value from the list.
13. Open the *Flow nature* drop-down list box and select a value from the list. The lower half of the dialog box reflects the selected flow nature.
14. Type in the data in the fields in the bottom half of the dialog box. See section 5.6 for details.
15. To save and close the dialog box, click [Save].
    If you only want to save, click [Apply].

5.4.3 Copy logical meters to create a new one

Step-by-step procedure

Start window

1. Click the *Meter* symbol.
2. Select a similar, existing meter.
3. Right-click the *Meter*.
4. Select "Copy".
5. Click the desired button in the confirmation message.



8713o95de: Confirmation message for copying

Yes	No	Cancel
Copies…	Does not copy…	Cancel copy action
…the link(s) and node (Meter, *Node:* dialog box)		

6. Open the meter copy.

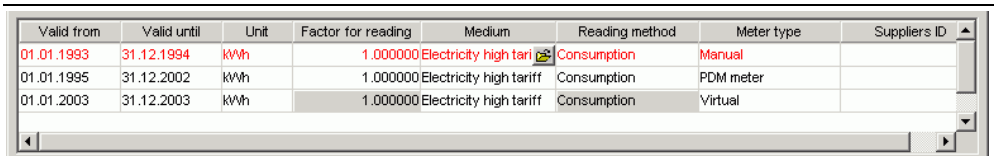
Meter dialog box

7. Change the logical name of the new meter in the *Name* field.
8. Change all other meter parameters as desired. To do this, go to the step-by-step procedure to create a new logical meter.
9. Save the new meter.
   9.1 To save/close the dialog box, click [Save].
   9.2 To only save, click [Apply].

5.5 Deleting logical meters

In order to delete a meter, two steps must be taken. First, delete the logical meter. Then, delete the associated data series from the PDM database.

5.5.1 Deleting logical meters of "Meter via PDM" or "Manual" flow nature



Valid from	Valid until	Unit	Factor for reading	Medium	Reading method	Meter type	Suppliers ID
01.01.1993	31.12.1994	kWh	1.000000	Electricity high tari	Consumption	Manual	
01.01.1995	31.12.2002	kWh	1.000000	Electricity high tariff	Consumption	PDM meter	
01.01.2003	31.12.2003	kWh	1.000000	Electricity high tariff	Consumption	Virtual	

8715o17en: The *Logical Meters* dialog box (excerpt)

Step-by-step procedure

Start window, left-hand side *(all objects)*

1. Click the *Meter* symbol.
   Start window, right-hand side *(meter contents)*
   Open the meter you want to delete:

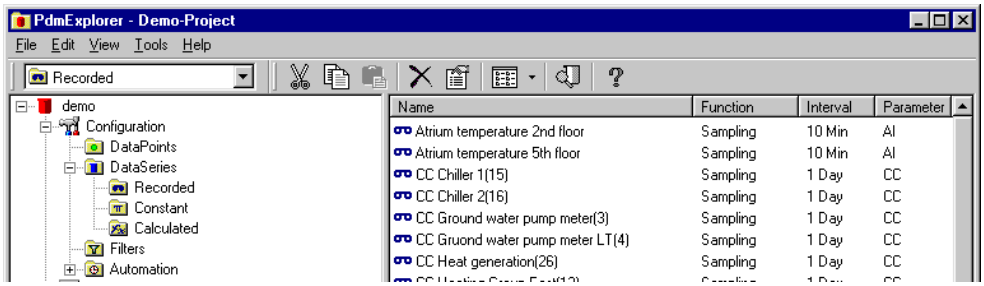
Important

2. If you want to delete a **physical** meter of flow nature *Meter via PDM* in the logical meter: Select the physical meter **now** and take note of all entries in the *Data point name* text field.
3. Click [Delete] and confirm.
4. Exit the dialog box by clicking [Save].

5.5.2 Deleting associated data series

Important

From CC V2.3, you can only delete data series from the PdmExplorer, even those created in CC.
CC creates a data series in PDM and assigns a corresponding name (e.g. CC outside air temperature (8)).



8713o86en: The *PdmExplorer – Recorded Data Series* dialog box (excerpt)

Step-by-step procedure

Start window

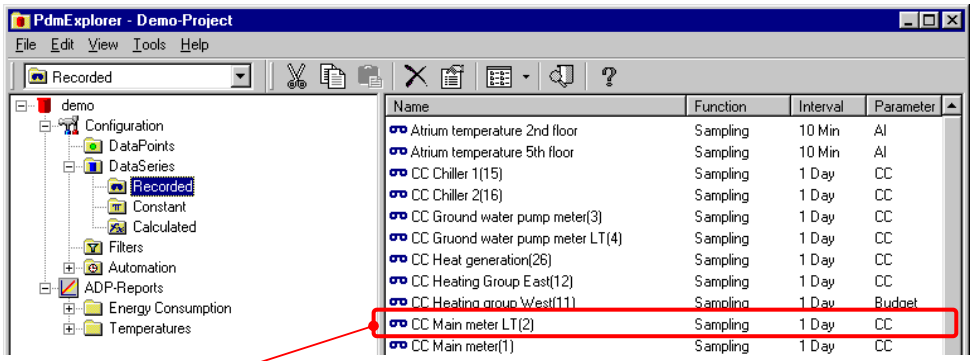
1. Go to System Definitions in the Explorer.
2. Double-click the Pdm-Explorer symbol.

Pdm *Start* window

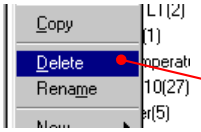
Select Configuration | Series | Recorded

Note

In the following dialog box, note that the data series whose meters you deleted has a parameter name different from CC.



8713o91en: The *PdmExplorer – Recorded Data Series* dialog box (excerpt)

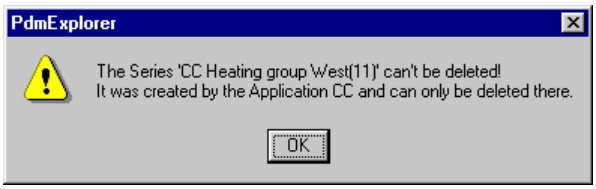


8713o90en:
Deleting a data series (context menu)

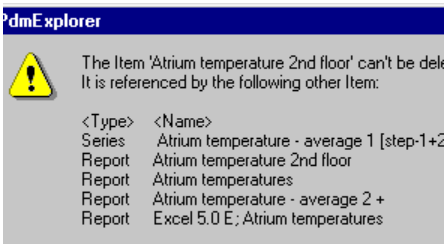
3. Right-click the meter you want to delete.
4. Click *Delete* and
5. confirm deletion.

Delete first the meter

If you try to delete a data series still used by CC or any other application, one the following messages appears depending on the data series' state:


PdmExplorer
The Series 'CC Heating group West(11)' can't be deleted!
It was created by the Application CC and can only be deleted there.
OK

8713o87en: Message indicating that the associated CC meter must first be deleted


PdmExplorer
The Item 'Atrium temperature 2nd floor' can't be del
It is referenced by the following other Item:
<Type> <Name>
Series Atrium temperature - average 1 [step-1+2
Report Atrium temperature 2nd floor
Report Atrium temperatures
Report Atrium temperature - average 2 +
Report Excel 5.0 E; Atrium temperatures

8713o89en: The data series is being used by another application.

Note

If several physical meters ("Manual" flow nature) were used in *one* logical meter, several data series with the same name are displayed. They can be distinguished by a number in brackets at the end of the name
(e.g., "CC Electric energy(32)").

5.6 Linking logical meters to the PDM database

A logical meter derives its data from:

- Either a physical meter whose values have manually been registered.
- Or from a physical meter whose values have been saved in the form of a data series in the PDM database.

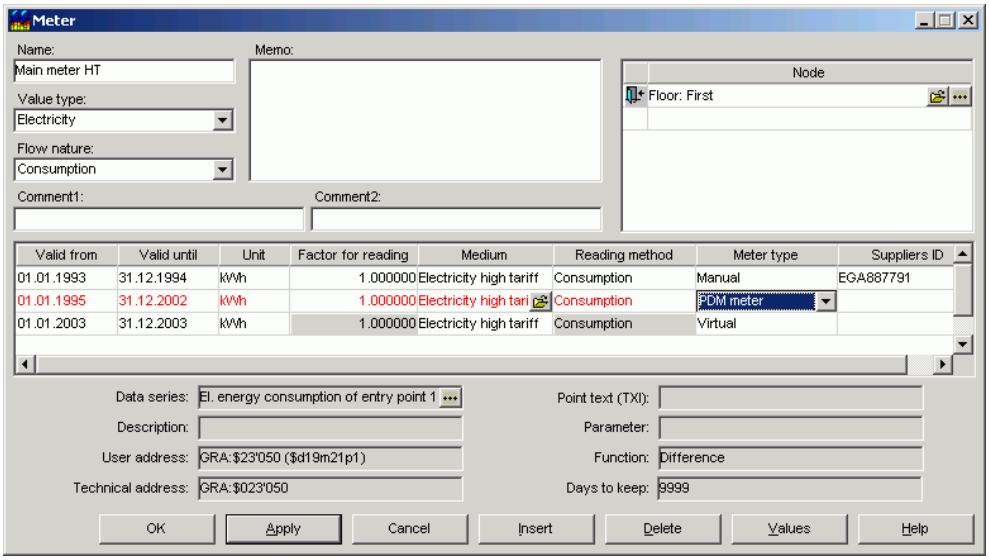
The following section shows how to link a meter to the PDM database For this purpose, the meter in the below window must be defined in the *Meter type* column as "**Meter via PDM**".

5.6.1 Opening the *Meter* dialog box

Select:

In the *Start* window
METER | double-click (or METER | right-click | Find).
CC opens a list of all available meters in the *Meter* dialog box.

In the *Meter* dialog box:
Select the meter | [Open]



8715o19en: The *Meter* dialog box with selected *Meter via PDM* flow nature

Lower half of dialog box

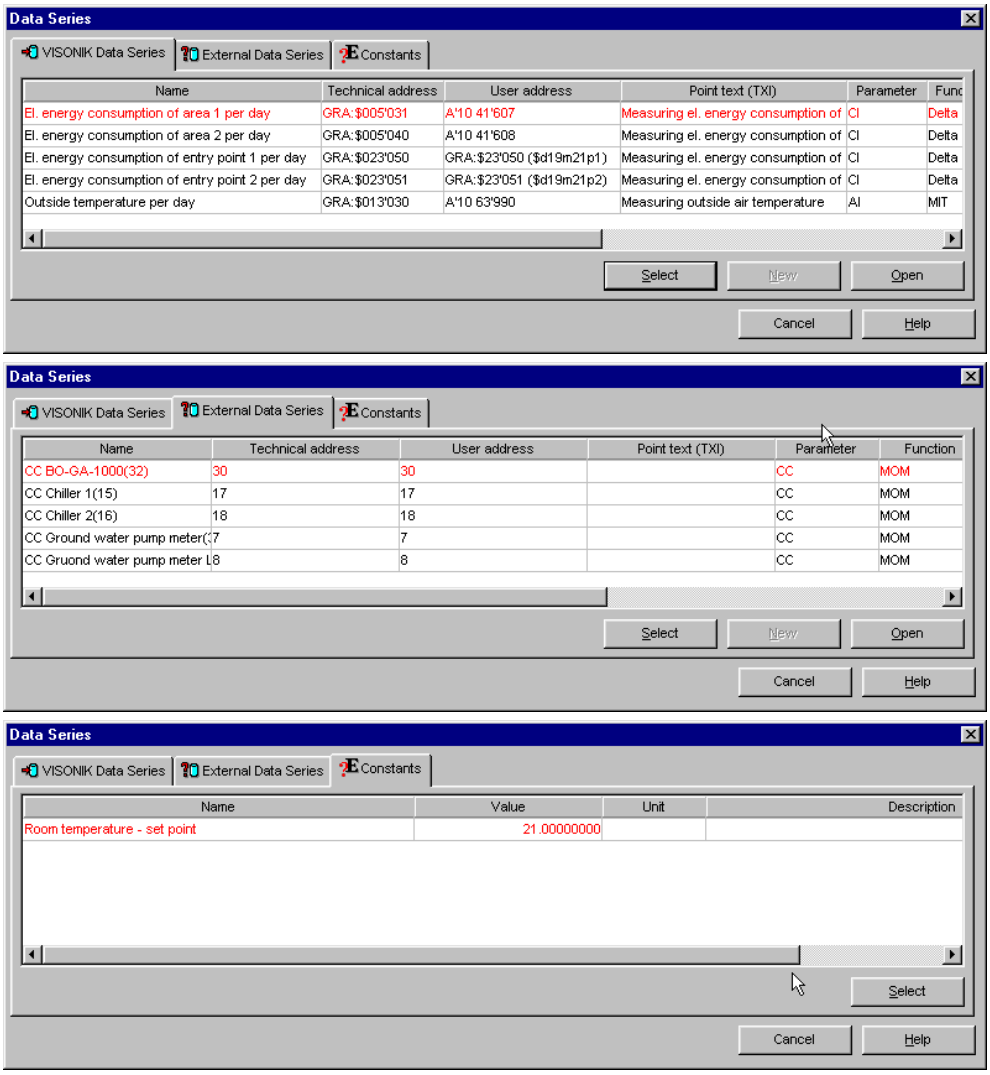
Data point name, Description, User address, Technical address, TXI, Parameter, Compression function, and Storage time. These fields describe a meter point registered via the associated building automation and control system and saved in the PDM database. Select a meter from the *Data Series* text field. All remaining fields are completed automatically.

5.6.2 Linking a logical meter to the PDM database

Step-by-step procedure

1. Make sure that the meter to be linked in the *Flow Nature* column is defined as "Meter via PDM".
2. Click the button to the right of the *Data series* field. The *Data Series* dialog box opens: This dialog box contains the VISONIK Data Series, External Data Series, and Constants tabs.
3. Select a database point from the *Name* column by selecting it and clicking [Select]. The *Data Series* dialog box is closed and the selected point is transferred to the *Name* field.

4. To load database values at a later time, click [Values] in the *Meter* dialog box. The *Values for:* dialog box opens enabling you to enter the date range for the data you want to load.



8715o23a,b,c,de: The tabs of the *Data Series* dialog box

Sort

You can sort the lists according to various aspects.

Select: **Point to any position with the mouse pointer | right-click | SORT...**

Filter

You can filter the lists according to various aspects.

Select: **Point to any position with the mouse pointer | right-click | FILTER...**

Remarks

- Meaning of data series type: See PDM user's guide.
- You can only display data series with a *resolution* of *24 hours*. With the PdmExplorer, you can derive 24-hour data series from data series of smaller resolutions.
- Click *New* (in the Pdm Explorer) to create new PDM data series.

5.7 Linking logical meters to manually acquired data

A logical meter derives its data from:

- Either a physical meter whose values have manually been registered.
- Or from a physical meter whose values have been saved in the form of a data series in the PDM database.

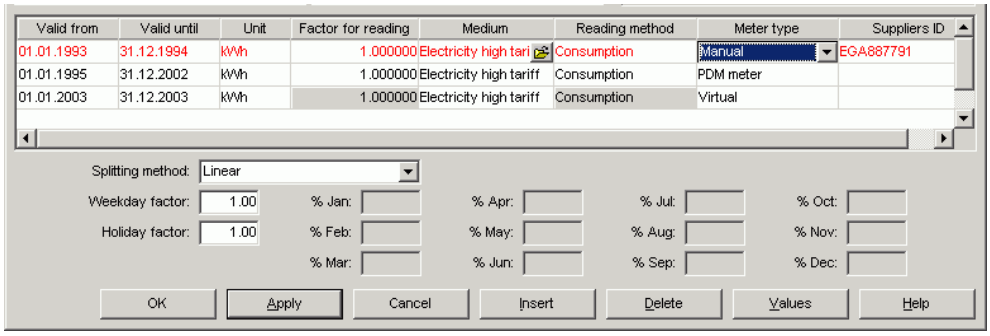
The following section shows how to link a logical meter to manually acquired meter data. For this purpose, the meter in the below window must be defined in the *Meter type* column as **"Manual"**.

Select:

In the *Start* window
METER | double-click
(or **METER** | right-click | **FIND**; or **METER** | right-click **| VALUES**).
CC opens the selection dialog box for meters.

In the *Meter* dialog box:
Select the meter | [Open]

CC opens the *Meter* dialog box.



8715o18en: The *Meter* dialog box with selected *Manual Reading* flow nature (excerpt)

Splitting method

Linear means that the values of monthly meter readings are equally distributed across the 30 days of the respective month.
Forecast uses numbers from the associated forecast model to distribute consumption over the respective months.
Distribution key applies freely selectable, monthly percentage points to distribute the values over one full year.

Working day, holiday factor

Defines the weighting of working days and holidays with regard to distribution of the registered data.

Monthly fields

Distribution by percentage points of the registered data, provided the data is distributed as per a distribution key.

Save

Saves new/changed data in the database and closes the dialog box.

Apply

Saves new/changed data to the database without closing the dialog box.

Cancel, Help

Standard Windows functionality.

Insert

Inserts an empty row. Default: PDM meter.

Delete

- If a row is selected: Deletes the contents of the selected row.
- If nothing is selected: Deletes the entire contents of the open *Meter* dialog box.

Note

1. Click [Cancel] to undo deletion.
2. The meter is deleted finally as soon as you click [Apply] or [Save].

Show Values

PDM Meter: If selected, opens the *DataEdit* dialog box to change and delete data.

- **Manual Readings**: If selected, opens the *Manual Readings for:* dialog box, which allows you to edit or newly enter manual readings for the selected meter.

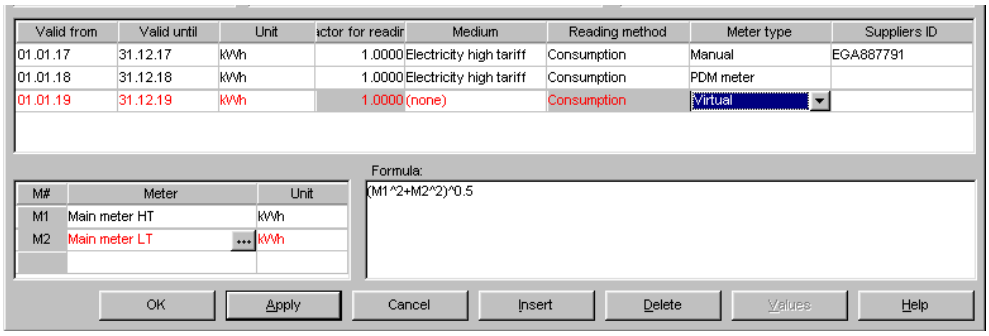
5.8 Linking virtual meters to physical/logical meters

A virtual meter derives its data from the data of real meters by calculation. For this calculation, formulas defined by the user are used.
The following section shows how to link a virtual meter to real meters For this purpose, the meter in the following window must be defined in the *Meter type* column as **"Virtual"**.

Select:

In the Start window
METER | double-click
(or **METER** | right-click | **FIND**; or **METER** | right-click **| VALUES**).

In the *Meter* dialog box:
Select the meter | [Open]



8715o20en: The *Meter* dialog box with selected *Virtual* flow nature

M# Continuous numbering of the real meters or meter data linked to the meter.

Meter Real meters or meter data linked to the virtual meter.

Unit Unit of

Formula Type in the desired formula. The following operands are possible:

Operand	Meaning	Remarks
+	Add	"Hard" addition: If no meter value is available for an addend, value 0 is output. The report then shows that at least one value is missing.
(+)	Add	"Soft" addition: All addends with available meter values are used; addends without values thus add 0 to the sum.
–	Subtract	–
*	Multiply	–
/	Divide	–
^ (=1)	Raise to a power	Exponent for power n.
^ (<1)	Root	Degree of the room (as in b1/n).
if then ... else endif	Condition	The condition must be concluded by "endif".

Save Saves new/changed data in the database and closes the dialog box.

Apply Saves changed data to the database without closing the dialog box.

Cancel, Help Standard Windows functionality.

Insert This inserts an empty meter row. Default: PDM meter.

Delete

- Row selected: Deletes the contents of the selected row.
- Nothing selected: Deletes the entire contents of the open *Meter* dialog box.

Show Values No function.

5.9 Entering manually read meter data

Open the *Manual Readings for:* dialog box to enter manual reading data for a particular meter.

- You can use the same dialog box for several meters.
- A meter reading sheet is available for manual readings.
- After completing this sheet (walk through the entire building), enter the data in the identical form.

Note

You can also print the PDM meters for check-up rounds. To do this, you must set an appropriate filter.

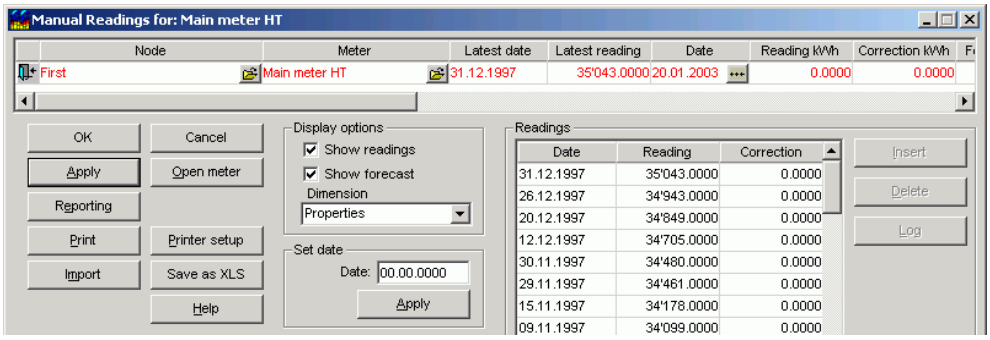
5.9.1 Opening a dialog box to enter information for individual meters

The following example refers to a particular meter.

Select:

In the *Start* window
METER | double-click
(or METER | right-click | Find).
CC opens a list of all available meters in the *Meter* dialog box.

In the *Meter* dialog box:
Select the meter | [Values]
CC opens the *Manual Readings for:* dialog box.



8715o26en: The *Manual Readings for:* dialog box (all meters, excerpt)

Tip

The following applies to entering, changing and inserting data:
Top part of dialog box: Enter the **latest values** and, if necessary, the **date** and any **corrections**.
Bottom part of dialog box: Make **changes** or add **new entries**.

OK

Clicking this button results in the following:

- The data is checked.
- If the data is approved, it is written to the database.
- The dialog box is closed.

Apply

If you click this button, the following occurs:

- The data is checked.
- If the data is ok, it is written to the corresponding database.
- The dialog box stays open.

Meter reports

Click this button to trigger a meter report that you can print and/or export.

Printing	When you click this button, the contents of the upper half of the dialog box are printed without opening the print menu. This is meaningful if several meters are selected (see section below). Click *Print Setup* to check the printer settings or to print to a different printer.
Import	This button allows you to import data into a text file. When you click this button, the *Import of Manual Readings* dialog box opens *(see the Manual Readings for:"* dialog box) where you can select the import file and define the row import format. Click *OK* to confirm your selection: The corresponding file is loaded.
Cancel	Standard Windows functionality.
Meter	Opens the *Meter* dialog box.
Print Setup	Use this button to select and set up a different printer.
Save As xls	Exports the list to Microsoft Excel for manual entries.
Help	Standard Windows functionality.
Display options	*"Show data entry" check box* – Shows or hides the information in the *Readings* list. *"Show forecast" check box* – Shows or hides the information in the *Forecast* column. *Dimensions drop-down list box* – Shows a list of all dimensions. – Shows if the meter is linked for each dimension.

5.9.2 Opening the dialog box to enter meter group information

The following example shows you how to select a group of meters.

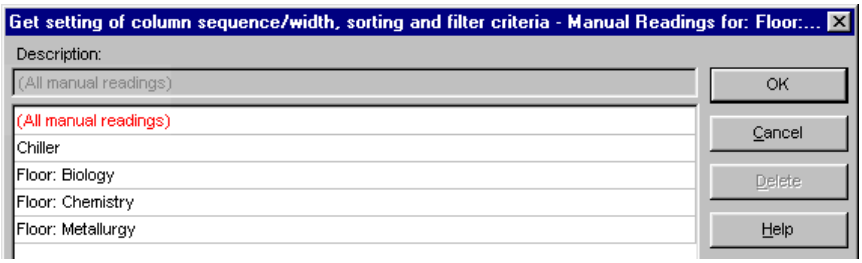
Select:

In the Start window
To retrieve all existing meters in a structure:
Meter | **right-click** | **M**anual **R**eadings or

To retrieve all existing meters in a node:
Select the node within the dimension | right-click | MANUAL READINGS

Note

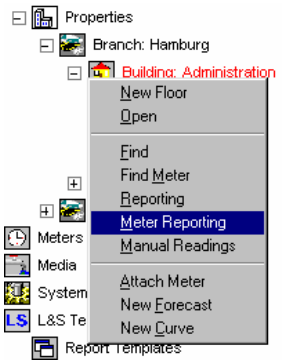
Before this dialog box opens, the following dialog box opens automatically:



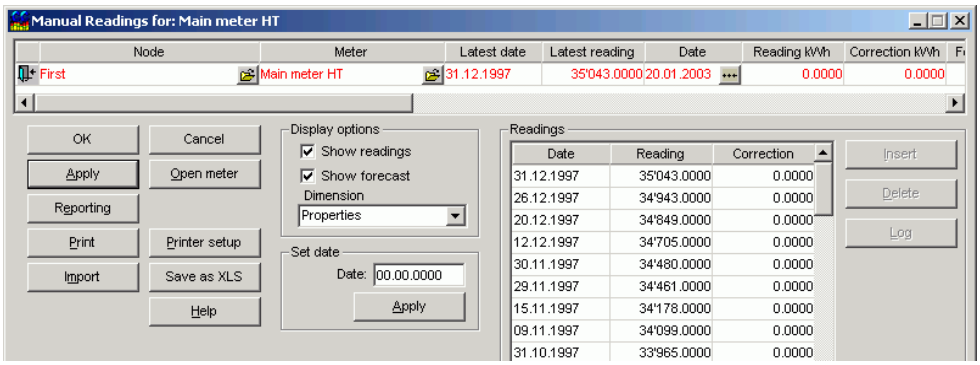
8715o27en:The Getting setting of column sequence/width... dialog box

OK	Opens the *Getting setting of column sequence/width* dialog box with all available settings.
Cancel	Closes the Getting setting of column sequence/width dialog box.
Delete	Deletes the selected settings. You cannot delete the *All Manual Readings* setting!
Help	Standard Windows functionality.

If you click [OK] , the *Manual Readings for:* dialog box opens.



8713o28en



8715o26en: The *Manual Readings for:* dialog box (excerpt)

Parameter fields (above)

Important — **Right-clicking** opens the context menu for *Find, Sort,* and *Filter* at any point in the table. See the following section for more information on the context menu.

Note — If no meters are displayed, you may have selected a wrong filter. Check the filter and select the correct one.

Node — Information as to where the respective meter is linked in an existing dimension.

Meter — The column label displays the designation of the associated meter.

Latest date — Date of the last meter reading.

Latest reading — Value of the last meter reading.

Date — The date of the new meter reading; see *Date* text field (center below).

Reading [Unit] — Entry field for new reading. The column label automatically displays the unit of the highlighted meter.

Correction [Unit] — Correction value on meter overflow: The correction value corresponds to the meter reading prior to reset to zero.

Forecast [Unit] — Display field. The information originates in the forecast model and relates to the time of the last reading to today's date. The column heading automatically displays the unit for the highlighted meter.

Device ID — Unique identification of the inserted device.

Value type — Value type of the highlighted meter.

Flow nature — Flow nature of the highlighted meter.

Memo — Free text field for comments.

Group boxes (center bottom)

Display options

Show readings
Button to display manual readings in the *Readings dialog box.*

Show forecast
Button to display forecast values in the *forecast* column.

Dimension — Drop-down list box to select the dimensions linked to the meter.

Set date — Date of the recording date. Default: current date.

Buttons (bottom left)

OK	Clicking this button results in the following: • The data is checked. • If the data is ok, it is written to the database. • The dialog box is closed.
Apply	If you click this button, the following occurs: • The data is checked. • If the data is ok, it is written to the corresponding database. • The dialog box stays open.
Meter reports	Click this button to trigger a meter report that you can print and/or export.
Print	When you click this button, the contents of the upper half of the dialog box are printed without opening the print menu. This is meaningful if several meters are selected (see section below). If you need to check the printer settings or if you want to print to a different printer, click *Print Setup*.
Note	Selections in the above dialog box (meter selection, width and sequence of columns) can be saved and used as a template at a later time.
Import	This button serves to import data from a text file. When you click this button, the *Import of Manual Readings* dialog box opens *(see the Manual Readings for:* dialog box) where you can select the import file and define the row import format. Click *OK* to confirm your selection: The corresponding file is loaded.
Meter	Opens the *Meter* dialog box for the meters selected in the list.
Settings	Opens the Getting setting of column sequence/width dialog box (see next page).
Printer setup	Standard Windows functionality.
Save as xls	Exports the list for new manual entries in a Microsoft Excel file.
Cancel, Help	Standard Windows functionality.
Insert	If the cursor is located at the bottom right in the dialog box (historical data), a new row is inserted.
Delete	Deletes the selected row at the bottom right of the dialog box (historical data).
Protocol	Opens a dialog box that provides a log for all manual changes in the selected row.

5.9.3 Adjusting the *Manual Readings* list

A printout of the *Manual Readings for Meters* list can be used as a form for on-site meter readings. For this purpose, you can adjust the form as follows:

Column width	To change the column width, move the mouse pointer to the column boundary in the column header, press and hold down the mouse button and drag the boundary to the left or right.
Remove columns	Remove columns by reducing their width until the column is no longer visible. If you later want to again show the column, click the column boundary to the right of the removed column and drag the boundary to change the column width.

Column order

To change the order of columns, move the mouse pointer to the center of a column in the column header, press and hold down the mouse button and drag the column to the left or right.

Sort
Select:

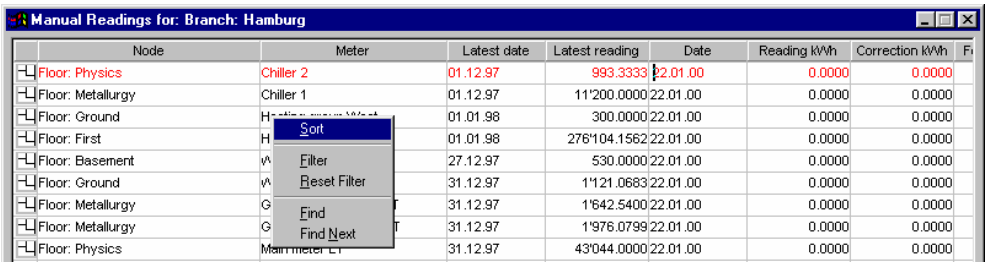
You can sort the list by various aspects.
Position mouse pointer | right-click | SORT

Filter
Select:

You can filter the list by various aspects.
Position mouse pointer | right-click | FILTER

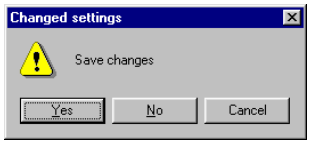
Note

Comment 1 and Comment 2 help you change both the sort order and the filter criteria as desired.



8713o30en: The *Sort* and *Filter* context menu (excerpt)

A dialog box opens with all permissible criteria for sorting or filtering. Refer to chapter "All meters at a glance" for further information.

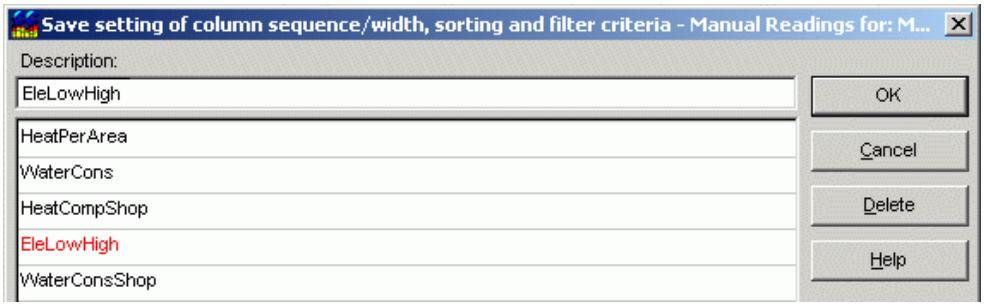


8713o31en

Saving your settings

You can save and later load the settings for column width, order of columns, sort and filter criteria when you open this dialog box as a template. This allows you to create meter reports and forms for readings to retrieve and print a number of meters in a particular display.

As soon as one of the above variables changes, CC automatically opens the following dialog box: If you click *Yes*, CC opens the following:



8715o32en:The Saving setting of column sequence/width dialog box (excerpt)

Save

Saves the current settings (after you type in a file name).

Output, Open

These buttons are not available in this dialog box.

Cancel

Closes the Saving of column sequence/width dialog box.

Delete

Deletes the selected settings.

Output dialog box

This dialog box allows you to define the type of output (print, save as *.xls/*.html) as well as the selections (node, views, meter report) prior to saving the report settings.

Help

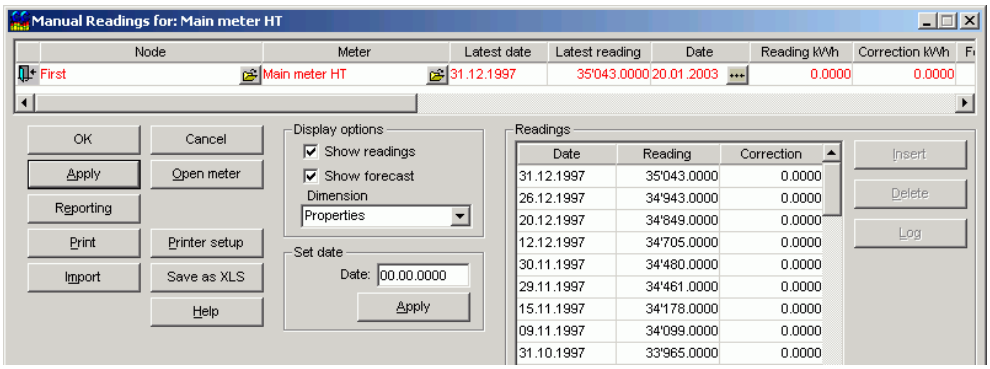
Standard Windows functionality.

5.9.4 Example: Entering manual readings

Select:

In the *Start* window
METER | double-click (or **Meter** | **right-click** | FIND)

In the *Meter* dialog box:
Select the meter | [Values]



8715o26en: The *Manual Readings for:* dialog box (excerpt)

Display options group box

If you select the Show manual readings check box, previous readings are displayed in the Readings group box.

Readings group box

(History list). You can view previously entered manual readings for this meter sorted by entry date.

The upper half of the dialog box shows, for the highlighted meter, the node name, meter name, current date and the fields enabling you to enter a manual reading for today's date.

Entering the latest manual readings
Upper half of the dialog box:

Step-by-step procedure

Start window

1. Click the *Meter* symbol.
2. Right-click the desired meter:
3. Click *Values.*
   The *Manual Readings for:* dialog box opens.

Manual Readings for: dialog box

4. Type in the read value in the *Readings* column.
5. Click [OK].
   The information entered is added in the history data list.
6. Type in the date and/or make corrections as needed.
7. Click [*Apply*].

Supplementing/changing manual readings
List in bottom half of dialog box:

Step-by-step procedure

Start window

1. Click the *Meter* symbol.
2. Right-click the desired meter:
3. Click *Values.*
   The *Manual Readings for:* dialog box opens.

Manual Readings for: dialog box

4. Place the cursor in the list.
5. Click [Insert].
   A new row is inserted, the list is sorted by date (ascending order).
6. Click [*Apply*].
7. (Optional) Click [Report] to verify the settings.
   The corresponding meter report displaying the entered values distributed over days is generated.

5.10 All meters at a glance

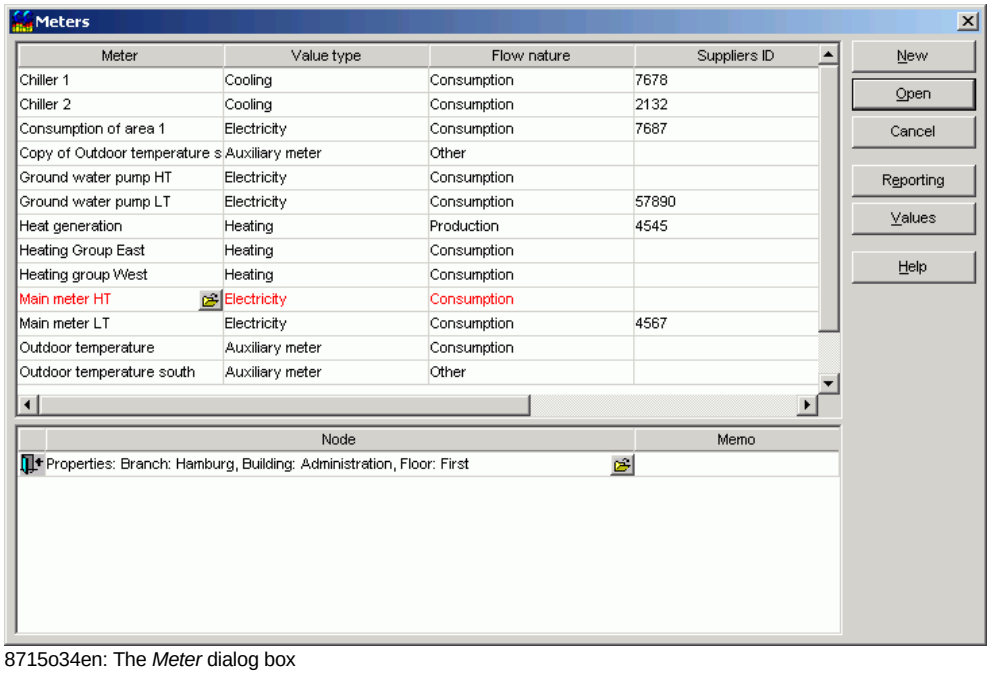
5.10.1 Opening the Overview window

Proceed as follows to gain an overview of all existing meters:

In the Start window

Select: **METER | double-click** (or Meter | right-click | Find)

8713o33en



8715o34en: The *Meter* dialog box

New — Opens a dialog box to enter a new meter.

Open — Opens a dialog box to change the selected meter.

Meter reports — Opens the *Meter Report* dialog box for all displayed meters in the indicated order.

Show Values

Opens the *Date Edit* or *Manual Readings for:* dialog box for the highlighted meter.
You can now supplement, change, or delete values.
Right-click (within the table) to open the *Sort, Filter, Find, Advanced* drop-down list box.

Sort

Opens a dialog box to enter sort criteria for the listed meters. See section below.

Filter

Opens a dialog box to specify filter criteria to only display the meters that correspond to the filter. See section below.

Find:

Opens a dialog box to enter search criteria to find a specific meter. The *Find* and *Sort* commands are especially useful when a large number of meters exists in the system.

Find Next

Finds the next meter that corresponds to the search criteria as specified in the *Find Meter* dialog box.

Cancel, Help

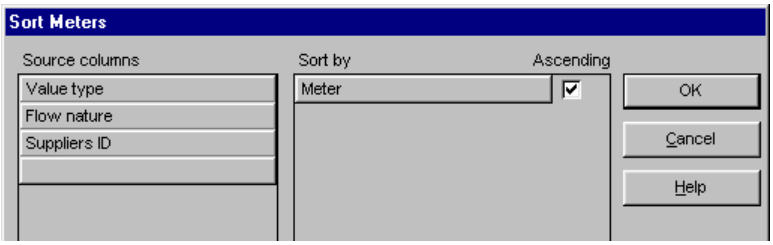
Standard Windows functionality.

5.10.2 Sorting in the Overview window

Sort in the *Sort Meters* dialog box allows you to sort the meter list according to your own criteria.

Select:

In the *Meter* dialog box
METER | double-click | right-click | SORT



8713o35ben: The *Sort Meters* dialog box (excerpt)

Sort criterion: In order to enter a sort criterion , enter the desired criterion in the *Source columns* field (e.g. Value type) and drag it to the *Sort by* field to the right. You can specify multiple criteria for sorting by dragging further boxes to the *Sort by* field.

Sort order: You can change the sort order by dragging the entries in the *Sort by* field up or down while holding down the left mouse button. The topmost entry has highest priority for sorting.

Descending or ascending order: By selecting or clearing the respective check box, you can define if you want to sort in descending or ascending order.

Tip

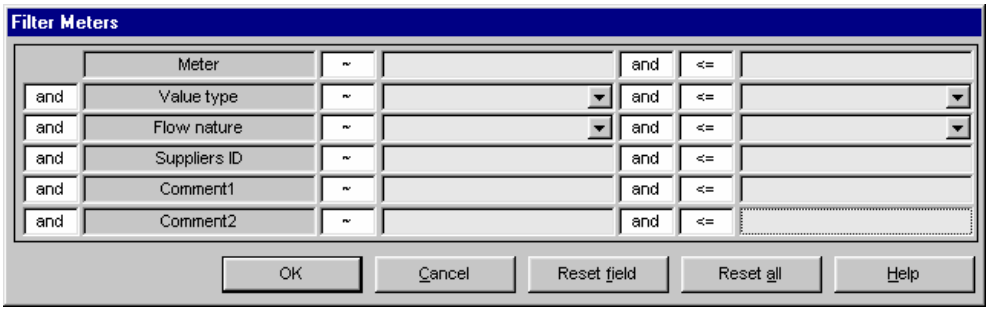
Use the source columns **Comment 1** and **Comment 2** in the Sort dialog box for advanced sort criteria.

5.10.3 Using filters in the Overview window

Filter in the *Meter* dialog box allows you to filter the meter list so that only the meters corresponding to your filter are displayed.

In the *Meter* dialog box

Select: **METER | double-click** | right-click | FILTER



8713o36aen: The *Filter Meters* dialog box

Use the following parameters in this dialog box to filter the meter lists:

- Logical operands (=, <>, >=, <=, >, <, and ~~)
- Meter name
- Value type
- Flow nature and
- Meter No. or Supplier ID.

All logical operators run comparisons to the indicated value. Only the "~" operand allows you to run comparisons to fuzzy values (masks).

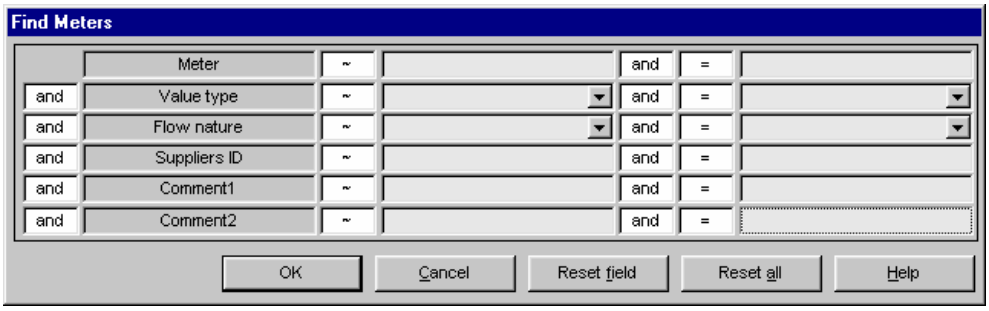
Example: Meter | ~ | *Abc*
searches all entries containing "Abc" as part of their name. An asterisk"*" or wildcard means that any number of characters or no characters may be in its place.

5.10.4 Running searches in the Overview window

In the *Meter* dialog box

Select: **METER | double-click** | right-click | Find

When you click **Find** in the *Meter* dialog box, a dialog box similar to the *Filter Meters* dialog box appears which allows you to specify search criteria to find a specific meter.



8713o37en: The *Find Meters* dialog box

Tip For advanced searches, use the source columns **Comment 1** and **Comment 2** to find text entered in the comment fields.

6 Media and prices

6.1 What are they?

A medium and its associated price model are key elements in CC.

Medium

Basic element (e.g. oil) used to produce that which we want to provide (e.g. heating energy).

That which we want to provide is called a value type.

Important

Each medium is always assigned to one or several meters.

Typical examples for media are:

- Domestic hot water
- Natural gas
- Oil
- Electricity, etc.

CC always applies media to calculate consumption and operating **costs** .

- A conversion factor can be assigned to convert the medium internally. Using this factor, CC converts, for instance, gas billed in [m^3] to [kWh]. This allows you to summarize overall energy consumption from several media in one value type.
- Each medium can be assigned to a price model. This is meaningful when the invoices of an external supplier are based on the medium (e.g. price of natural gas per m^3) and not on the high-temperature hot water produced.

Note

Do not confuse "medium" with "value type".

- A medium (e.g. oil or gas) is consumed to produce a value type (e.g. heating energy).

Price model

A mathematical concept used to calculate a currency from the input unit.

Each price model is assigned to a medium.
Typical price models are for example:

- Oil
- Electrical energy at high tariff
- Electrical energy at low tariff

6.2 Preparatory work

Carry out the following steps to create a new medium:

- Create a price model.
- Create a medium and link it to the price model.

Preparatory work carried out by Building Automation

Building Automation develops price models customized to your needs.

A typical price model such as for domestic hot water consumption (medium = domestic hot water) considers the following elements:

- Current price per m^3 of water.
- Basic supply fees per m^3.
- Monthly leasing rate for the water meter.
- Sales tax in %.
- All formulas to calculate the above elements.

6.2.1 Preparatory work on part of the system administrator

The system administrator can import price models from other projects if desired.

6.3 Creating a new medium

After you have created the price models, you must
- create the new medium, and
- link it to one of the price models.

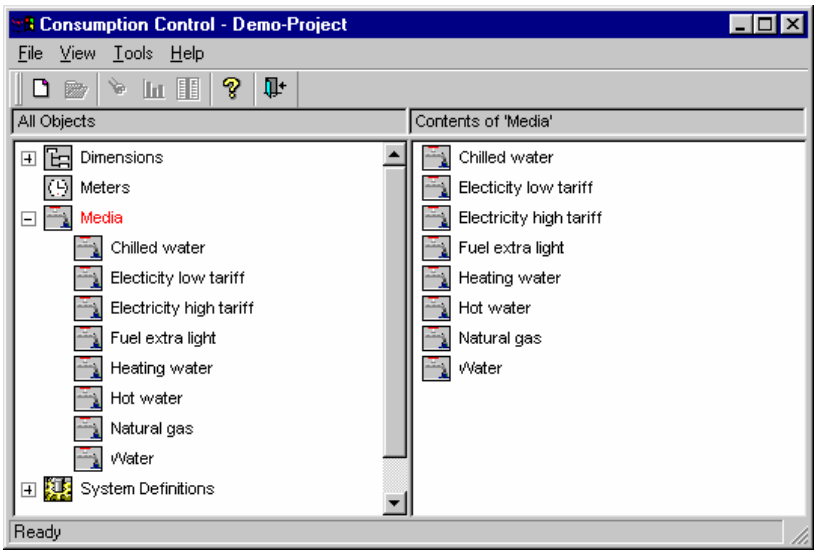
6.3.1 All media at a glance

In the *Start* window

Select:

MEDIA AND PRICE | double-click

The right portion of the window displays all previously defined media.



8713o38en:The *Overview* window containing the symbols for the various media

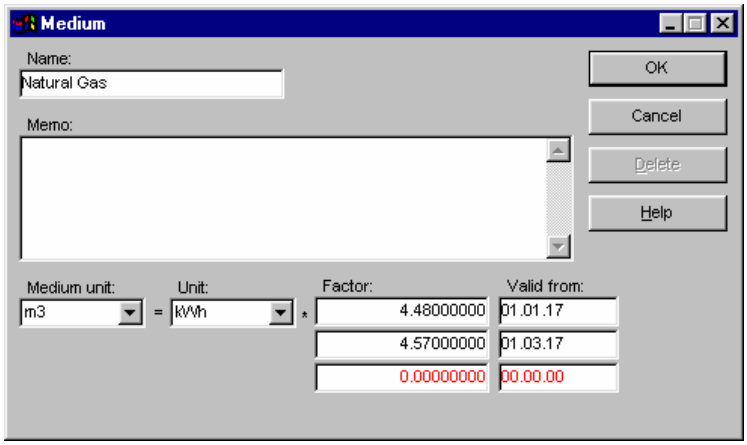
6.3.2 Opening a dialog box to create a new entry

In the *Start* window

Select:

MEDIA AND PRICE | right-click | New Medium

8713o39en



8713o40en: The *Medium* dialog box

Note

The "Factor" and "Valid from" fields appear only if a meter unit is selected in the "Unit" field.

Name

Name of the medium

Memo	Empty text field for comments.
Medium unit	Unit used to record and bill the medium.
Unit	Measuring unit for the converted unit.
Factor	Conversion factor between "Medium unit" and "Unit". This function is used, for example, when the quality of the delivered media is inconsistent (gas, oil, ...). Define fixed conversion in the *Unit*.
Valid from	Date from which the above conversion factor will apply.
Delete	• Selecting the parameters *Name, Information, Medium Unit* or *Unit* deletes the contents of the *Medium* dialog box. • Selecting the parameters *Factor* or *Valid from* deletes both parameters simultaneously. Proceed as shown below to delete a medium and then click [Save].
OK, Cancel, Help	Standard Windows functionality.

6.3.3 Creating a new medium

Step-by-step procedure

Start window

1. Right-click the *Medium and Price* symbols.
2. Confirm *New Medium.*
   The *Medium* dialog box opens.

Medium dialog box.

3. Type in the name of the new medium in the *Name* field.
4. Select the meter unit that the meter applies to record consumption and that is used to bill the medium from the drop-down list box.
5. Click [Save]. The basic information, i.e., the name and the unit for the new medium are now entered.
6. Click the *Unit* field.
   The drop-down list box containing all calculation units defined in the system opens.

6.3.4 Converting the medium unit to the unit for calculation

If the unit represents a meter unit, the following two fields appear:

- *Factor* to convert the medium unit to a calculation unit and
- *Valid from* to set the date from which the factor is to be applied.

Medium unit

The medium unit is the unit a meter applies when acquiring the medium.

The meter either directly applies the unit or applies a unit that is derived from it. At the same time, this unit serves as the billing unit for payments.

Unit for calculation

(*Unit* field) Unit that normally is used to calculate and bill energy consumption.

Why conversion?

For the "Heating oil" medium, the unit is liters (standard unit to measure consumption/costs). The liter, however, is not a very good unit to calculate energy consumption in a building. For this reason, CC converts the medium unit (here: liters) to an energy unit (here: kWh) to make sure that the resulting variable can be used for

comparison to different types of consumption. In many cases, the calculation unit and the medium unit are the same: For example, water consumption from the public water supply is measured and billed/calculated in liters. For this reason, CC does not allow you to enter a factor for these types of unit combinations.

Conversion

In the *Factor* field, you can enter the value for converting the medium unit to a calculation unit.

Step-by-step procedure

Start window

1. Right-click the *Medium and Price* symbols.
2. Confirm *New Medium.*
   The *Medium* dialog box opens.

Medium dialog box.

3. Enter the conversion factor in the *Factor* field.
   The *Medium* dialog box shows that one cubic meter of gas is converted to 4.48 kWh.
4. Enter the date in the *Valid from* field from which the factor is to be valid.
   If, for example, the heating value changes for a new delivery, the entries in the *Factor* and *Valid from* fields can be adjusted any time. CC automatically considers any changes when calculating or displaying the data.
5. If you want to remove a factor and its date range, select the row and click [Delete].
6. Click [Save] *or* [Cancel] if you do not want to save the change.

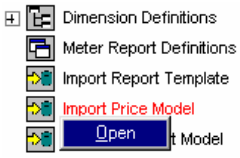
6.4 Importing price models

Proceed as follows to import a price model that you have already used in a different project:

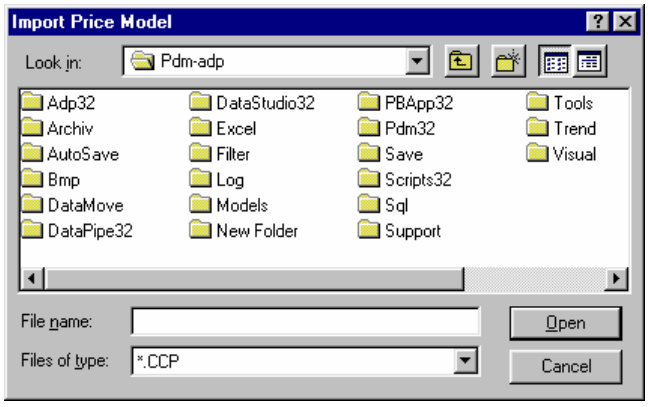
In the Start window

Select:

SYSTEM DEFINITIONS | IMPORT PRICE MODEL | double-click (or **Open**)



8713o41en



8713o42en:The *Import Price Model* dialog box

Note

You must save the price model in a compatible format. Siemens Building Technologies exports the data from CC.

6.5 Assigning a price model to a medium

In order to calculate the costs for a medium (natural gas, electricity), the associated medium must be linked to a price model. A price model comprises all rules to calculate the consumption cost for a medium based on the consumption of that medium. Siemens Building Technologies develops price models customized to your needs.

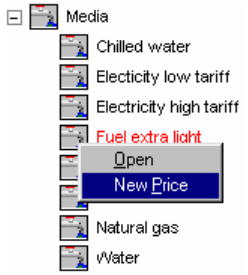
Example

A typical price model, e.g. for consumption of domestic hot water (medium=domestic hot water) includes the following elements: Current price per m^3, water, monthly lease for water meter, basic supply fees per m^3, sales tax in % as well as all other associated formulas required to calculate the above elements.

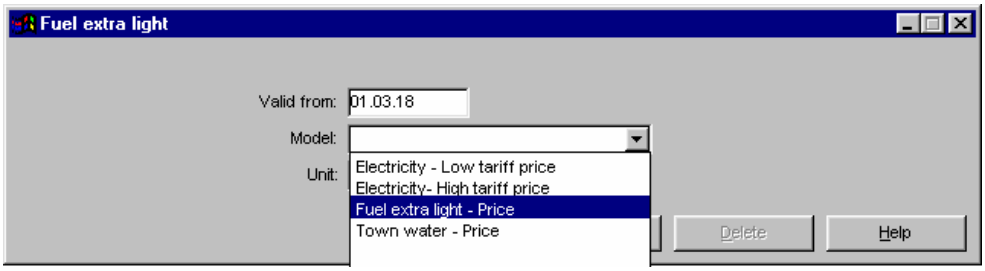
In the *Start* window

Select:

MEDIA AND PRICE | right-click | NEW PRICE MODEL



8713o43en



8713o44en: The *Heating Oil – extra fine* dialog box(excerpt)

Step-by-step procedure

Start window

1. Select *Medium and Price* in the Explorer.
2. Right-click the symbol *Extra-light heating oil.*
   A drop-down list box opens.
3. Select *New Price Model* from the drop-down list box.
   The *Extra light heating oil* dialog box opens.

Extra light heating oil dialog box

4. Type in the date from which the new price model is to be applied in the *Valid from* field.
5. Open the *Model* drop-down list box and select the suitable price model (Extra light heating oil for our example).
   If needed, discuss the price models with your Siemens Building Technologies representative.
6. Click [Save] *or* [Cancel] if you do not want to save the change.

6.5.1 Copying a price model

You can copy price models to quickly introduce changes to prices of media in your calculations.

Note

Copying is especially useful if you want to create a price model that is only slightly different from an existing one such as changed prices for media, applicable from a particular date.

Tip

If you need an entirely new price model, we recommend that you discuss this with a Siemens Building Technologies representative.

Start window

Step-by-step procedure

1. Select *Medium and Price* in the Explorer.
2. Select the symbol you want to copy.
   The symbol appears in the right-hand side section of the window.
3. Right-click the symbol.
   The "Open", "Copy" menu opens.
4. Click [Copy].
   The copy is displayed with the current date on the original price model.
5. Double-click the price model to open (or right-click [Open]).

Price model (…) dialog box

6. Change the new price model as described in "Changing tariffs in a price model".
7. Click [Save] *or* [Cancel] if you do not want to save the change.

6.6 Changing the tariffs, validity, and medium units in a price model

You can change all current prices, leasing rates, tax rates, etc. in the price model to reflect the most up-to-date conditions at any time. Two variants are possible:

- The changes apply without restrictions.
- The changes apply from a specific date onward.

We distinguish between the following:

- The changes apply without restrictions.
- The changes apply from a specific date onward.

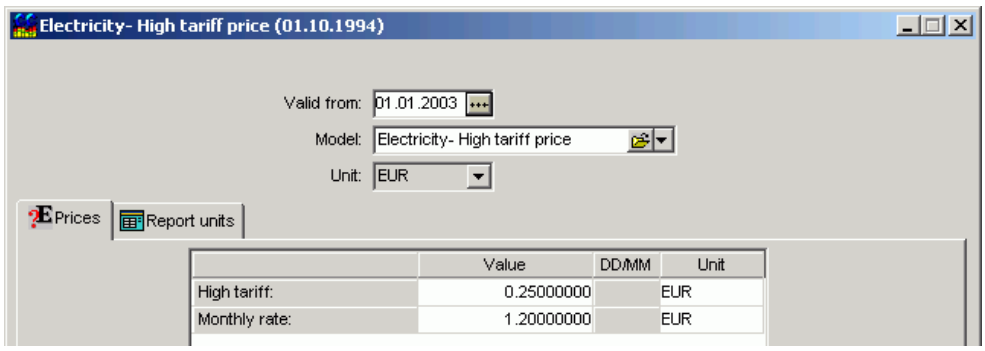
The following screenshots show the price model dialog boxes for "Prices" and "Report unit". They are valid for both.

In the *Start* window
Select the medium whose price model you want to change.

Select:

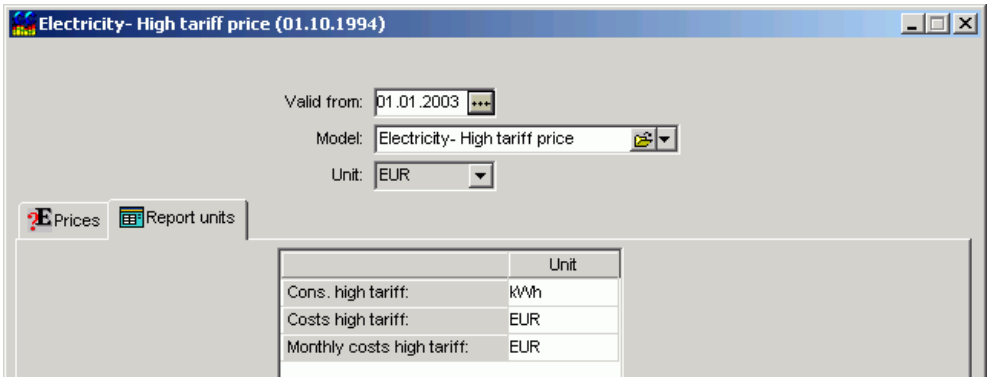
In the *Start* window, right-hand section of the window
Select the price model | right-click | OPEN

Use this dialog box to change the validity, price model, and medium prices:



8715o45aen: The dialog box/tab *containing the price model data* (excerpt)

Use the following dialog box to change the validity, price model, and report units:



8715o45ben: The dialog box/tab *containing the price model units* (excerpt)

6.6.1 The changes apply without restrictions

Step-by-step procedure

Start window

1. Select *Medium and Price* in the Explorer.
2. Right-click the symbol for the price model you want to change.
   A selection list opens.
3. Click [Open].
   The dialog box for the selected price model opens.

Price model (…) dialog box

4. Change the necessary parameters.
5. Click [Save].

6.6.2 The changes apply from a specific date onward

Step-by-step procedure

Start window

1. Select *Medium and Price* in the Explorer.
2. Copy the price model you want to change.
   See "Copying a price model".
3. Open the ***copy (!)*** of the price model you want to change.

Price model (…) dialog box

4. Make your changes.
   Remember to enter the date from which the change is to apply in the *Valid from* field.
5. Remember to select the same price model (see 3) in *Model*.
6. Enter the (new) prices.
7. Click [Save].

7 Reports

7.1 What are they?

Creating meaningful reports is the aim of this program, as they help you optimally monitor all energy and consumption data.

Node report
Meter report

CC allows you to create to different types of reports, namely **reports on nodes and meters**.

Node report

Evaluation of energy consumption and costs for any given node.
Display alternatively in tables and/or charts.

Meter report

Tabular display of the acquired raw data and the derived consumption for an individual meter or a group of meters.

Object orientation

Consumption Control is an object-oriented program. The meter reports you can create clearly demonstrate CC's high flexibility in terms of electronic data processing.
A particular report template, within the same structure, can be used several times, i.e., for each node.
Example: The "Refrigerant consumption" report can evaluate *all* data of a specific building as well as all data of a *specific* floor or a *specific* room within this building.

- Evaluation is carried out by:

Value types (e.g. hot water, chilled water, electric energy, etc.).
Dimension variables (e.g. heated area, number of beds in a hospital, etc.).
Mixture of value types and dimension variables.

- For comparison purposes, you can create relations between energy consumption and costs and other units via the following:

Setpoints
Degree days
Reference year values
Budget values

Note!

- Evaluations are displayed on a daily, weekly, monthly, or annual basis.
- All evaluations in CC are carried out by daily values that are added up or averaged to weeks (months, years).

7.2 Preparatory work

New report

Carry out the following steps to create a new report:

- Create a report template.
- Create a customer report definition from the report template and specific settings.
- Select the desired node and then select "Report" from the context menu.
- Select the associated customer report, view, resolution, and time period.
- Show the report.

7.2.1 Preparatory work on part of Siemens Building Technologies

Siemens Building Technologies prepares report templates and provides them as standard reports. If desired, we also create customer-specific templates.

7.2.2 Preparatory work on part of the system administrator

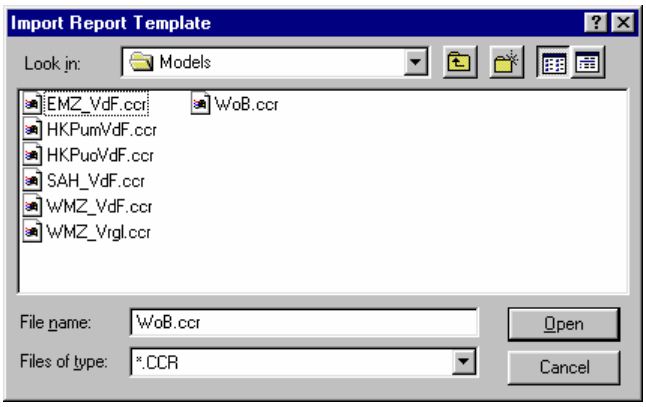
After you have defined the report templates, define specific customer reports from these templates by defining the units which are not determined conclusively in the associated report template.

7.3 Importing a report template

Note

Normally, Siemens Building Technologies provides the report templates necessary, or they may already be integrated in one of your projects.
Proceed as follows to import a report template:

In the *Start* window
Select: System Definitions | Import Template | double-click



8713o47en:The *Import Template* dialog box

Note

- The report template you want to import must be saved in the required format (*.ccr). (Siemens Building Technologies creates these templates. You can use a layout file (Microsoft Excel 4 or 5) for reference).
- Error messages relate to missing units. You must define the units **prior to importing** in the report templates.

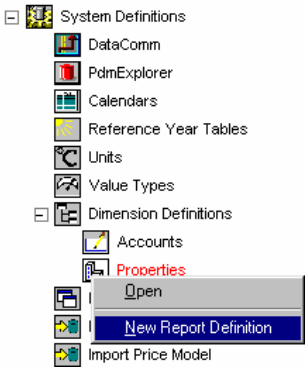
7.4 Creating customer report definitions

7.4.1 The Report Definition dialog box

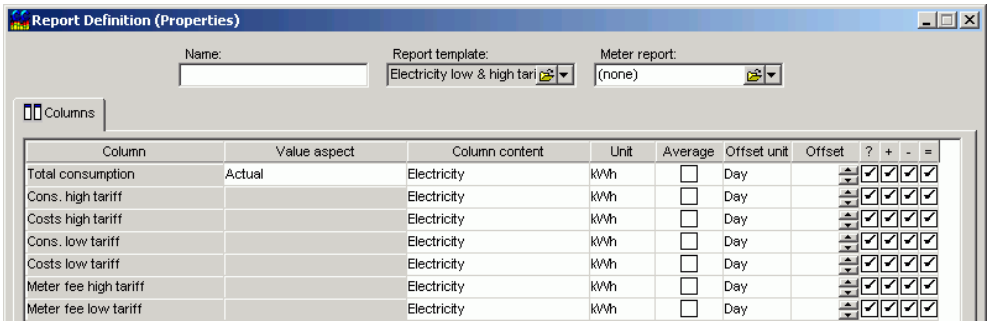
Note

- Report definitions are base don report templates. To create a customer report definition, there must be at least one report template.
- For reasons of clarity, the screenshot below shows a dialog box with an existing report definition instead of an empty report definition.

In the *Start* window
Select: System Definitions | Dimension definitions | select node | right-click | New Report definition



8713o48en



8715o49aen: The *Report Definition, Columns* tab dialog box

Header information

Name — Title of the customer report.

Report template — Select one of the available report templates. If you want to create a report definition, there must be at least one report template.

Tip — By completing these two fields (*Name* and *Report Template*), a customer report is created from the report template.

Report template Selection — Click the button if you want to view or change a report template (displayed only if logged in under SBT Engineering password).

Meter reports — Optional entry of a template for additional meter reports that are printed after concluding the report.

Important

Without template,
- you cannot print meter reports
- you cannot replace Microsoft Excel files in automatic mode.

You can create templates later on (interactively in the *Reports for:* dialog box.

The "Columns" tab

Column — Column titles

Value aspect

Actual Value: The report displays all actual values. If current values do not exist, the forecast value is displayed.
Actual Value Corrected: Same as above, but by using forecast values. Formula:
Formula: Actual value corrected $a_{korr} = a\frac{b}{c}$ where

a = actual value b = ref. forecast* c = forecast

Forecast: The report displays forecast values based on, e.g. actual outside temperature.

Ref. forecast: The report displays forecast values based on year tables.

Parameters are important only if forecast models are available for calculation that were prepped accordingly.

Column content — Here, depending on the template, you select the associated value type(s) and the dimension variables which you want to display in this column.

Note — With formulas, you must select the acquisition group that contains the associated forecast model !

Unit — Select the appropriate unit for the associated parameter via the drop-down list box.

Average — Activate the check box, if you want the report to display the mean values of a define time period. If you do *not* select the check box, the values are added up (e.g., 7 days into one week, etc.)

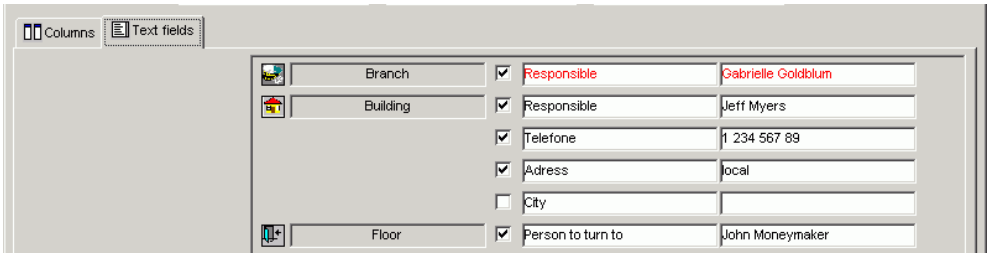
Note — The mean value is meaningful for parameters such as outside air temperature or heating consumption per area, etc.; consumption, however, should be added up.

Resolution	(*Offset unit*) Drop-down list box to select Day, Week, Month, Year.
Offset	The values are calculated deviating from the current date by applying this offset. If the offset is for instance "–1" and the offset unit is "Month", the values of the previous month are then displayed.
? + – =	Define the meter categories which are to be possible in the report. ? Other + Production meter – Distribution meter = Consumption meter

The "Text field" tab

Note

The Text field tab appears only if the report templates text fields are defined (only by SBT Engineering).



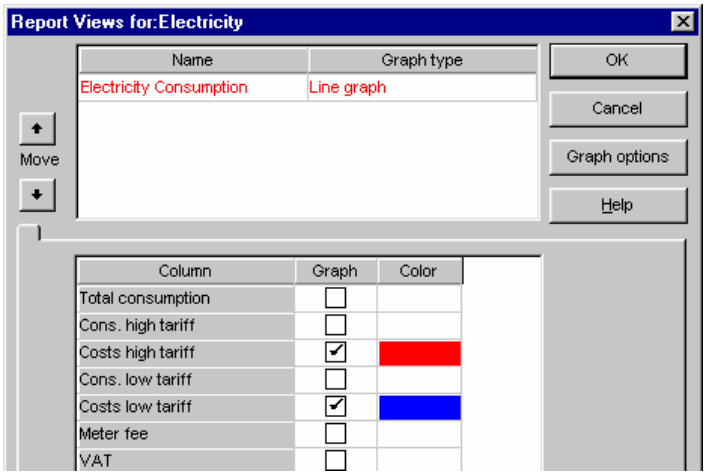
8713o49xben: The *Report Definition, Text field* tab (excerpt)

Left column	• The column to the left references a cell in the report template (Tab *Views*, all texts). • Check box: Assign texts from "All texts".
Right column	This column contains the field labels from node texts (report template, View tab) for individual texts. You can select a specific text for each level.

Buttons

Delete	Deletes the report definition. CC prompts you to confirm your choice and further checks any integrity conditions to ensure that you do not mistakenly delete a report definition.
Note	• Click [Save] to confirm the deletion. • Click [Cancel] to restore the previous state.
Refresh	CC refreshes the dialog box. This is especially important to update changes of the template.
View (see next screenshot)	Opens the *Report View* dialog box where the graph type and the associated options can be defined.
Condition	Opens a dialog box that enables you to specify various criteria for the report's text fields.
Note	The conditions influence curve selection for report definition.
Export	Click this button to export the current report definition.
Import	Click this button to import a report definition.
Note	• This button is available only if there is no name and no report template in the corresponding fields of the report definition. • *Only* nodes that comply with the set criteria are included in the report. The conditions influence curve selection for report definition.
Save, Cancel, Help	Standard Windows functionality.

7.4.2 Displaying reports graphically (basic settings)



8713o53en: The *Views for Report:* dialog box

Views

The *Views for Report* dialog box allows you to define the graphical display of a report as follows:

- Report names
- Statistical curves
- Graph type
- Column color
- Graph character

You can change or select all of the above.

Name

Name of the reports.

Save, Cancel, Help

Standard Windows functionality.

Move

Use the arrow keys to move up and down the top dialog box.

Column

Designation of the report columns; cannot be changed.

Graph

Select this check box if you also want to display the values in a graph.

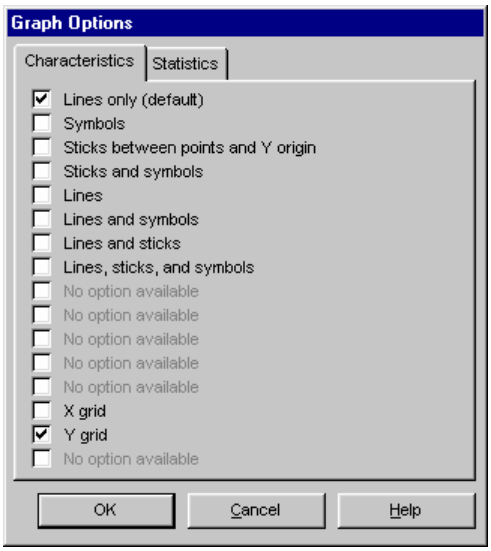
Color

Assign the color that you want to be displayed in the graph.

Graph type

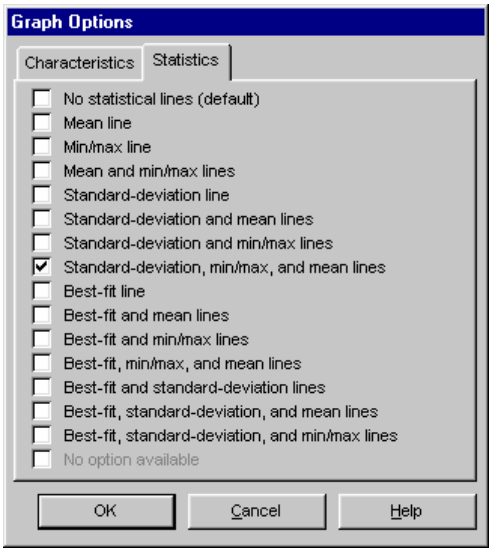
Drop-down list box to define the type of graph; Pie chart, 3D pie chart, bar chart, 3D bar chart, line chart, energy signature, tape chart, and No chart.

Graph option



This tab allows you to define the actual presentation of the data series in a report graph.

8713o50ben: Dialog box with *Character* tab



8713o50cen: Dialog box with *Statistics* tab

This tab allows you to define the actual presentation of the statistical values for the data series in a report chart. For further options (advanced settings), go to the report view (*Reports for:* dialog box.

Note

Options selected there may override the options you set here.

7.5 Creating reports

After creating the report templates and the associated customer report definitions, you must:

- Select the desired node and then select "Report" from the context menu.
- Select the associated customer report, view, resolution, and time period.
- Display and/or print the report.

7.5.1 Opening the *Reporting for* dialog box

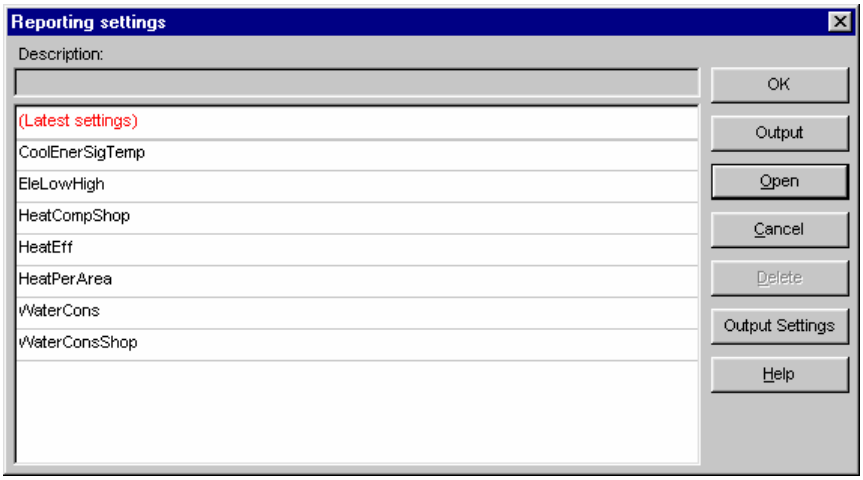
In the *Start* window

Select:

Select node | right-click | REPORTING

Note

Before the Reporting for: dialog box opens, the Reporting settings – Reporting for: dialog box opens:



8713o51aen: The Report settings – Reporting for: dialog box

Tip

You can scroll up and down in this dialog box by using the page-up and page-down keys.

OK — Opens the *Reporting for* dialog box and creates a report with the most recent settings from the *Reporting for:* dialog box .

Output — Prints or exports to *.html or Excel a report with the selected settings.

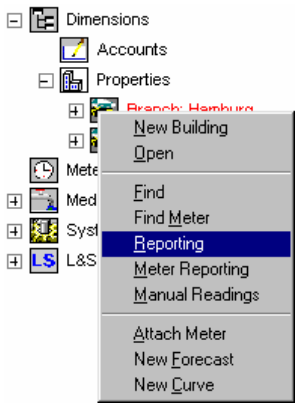
Open — Opens the *Reporting for:* dialog box with the active (highlighted) settings.

Cancel — Opens the *Reporting for:* dialog box with the predefined standard settings.

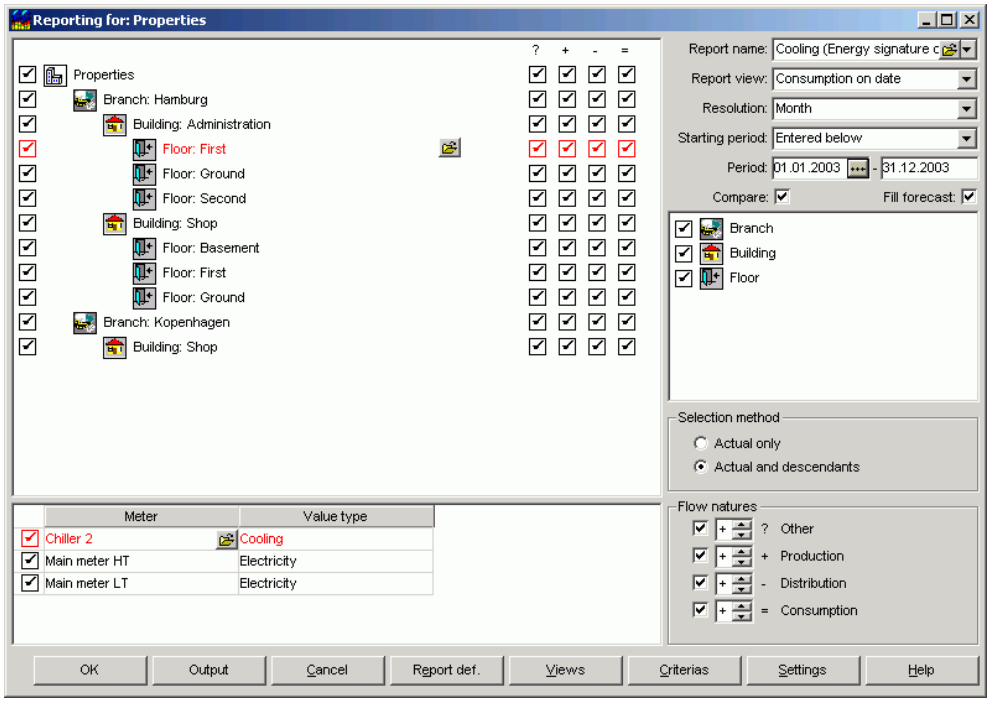
Delete — Deletes the selected settings.

Output dialog box — This dialog box allows you to define the type of output (print, save as *.xls/*.html) as well as the selections (node, views, meter report) prior to loading the report settings.

Help — Standard Windows functionality. After you have made your selection, the *Reporting for:* dialog box opens:



8713o52en



8715o53en: The *Reporting for:* dialog box

Main section

Large section top left — The **main window** displays the object hierarchy level where you select the report function as well as all subordinate levels.

The left provides symbols with check boxes serving various purposes depending on the report type:

Comparative reports — **In comparative reports** (***compare*** check box is selected), all selected (by clicking) nodes are introduced in the report. Non-selected, hierarchically lower nodes are totaled to the lowest selected node.

Standard reports — **In standard reports** (*compare* check box is **not** selected), the symbol's check boxes **exclusively** serve output purposes. All selected nodes are printed if "Select" is chosen in the "Node" menu of the print dialog box.

Flow nature — **The right** provides a number of check boxes (?,+,-,=) which you can use to define for each node the flow natures that should be considered in the report.

Note — For flow natures to be considered, you must select them here as well as in the report definition.

Open dialog — The row selected contains a selection button. When you click this button, the Properties dialog box for this node opens.

Small section to the right

This section contains symbols that allow you to click and select or clear **levels** (buildings, zones, floors, etc.) within the structure. Cleared levels are not considered in the report.

Note

Note the following difference:
- In *this* section, complete hierarchy levels,
- and in the large section, only individual nodes are selected or cleared.

Bottom section

Shows all meters linked to the node selected in the main section.

Note

The meters are displayed only if you select the corresponding flow natures in *Flow nature*.

Report name

A drop-down list box containing all available, predefined reports. The associated report template is displayed in brackets.

Report view

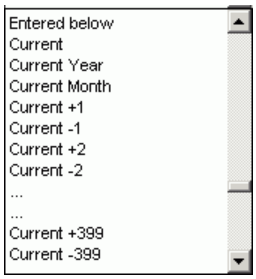
A drop-down list box containing all available views for the current report type.

Resolution

Time resolution for the report. (Drop-down list box to select Day, Week, Month, Year).

Starting period

Indicates the starting time from which the report is calculated. The drop-down list box provides the following options:



8715o53aen

Selection	Function/Comment
• Enter below	• Creates a report with the dates as entered in the [Span] field (from – until).
• Current	• Report from the current date.
• Current year	• Monthly report from the current date.
• Current month	• Daily report from the current date.
• Current –1 ... –399 Current +1 ... +399	• Report starting up to 399 periods earlier (current –399) or later (current +399). This option is sensible in particular for automatic printing.

Note

By entering a date in one of the fields in *Time Span,* CC automatically switches to the *Enter below* function.

Time span

Period for which you want to display data in the report.

Compare

Compact comparative report: Creates a special page for a row containing the values for all selected nodes as well as a total for all nodes.

Apply Forecast

Use this check box to select/clear the forecast model. When selected, the forecast model calculates missing data; see also "Creating a customer definition", "Value type".

Selection method

Actual only means that only the nodes selected are considered in the report.
Actual and descendants means that to print, all current nodes as well as those on subordinate levels are considered in the report.

Note

On calculation, this applies only if the "Compare" check box is selected.

Flow nature

The **check boxes** enable you to define the flow natures which you want to consider in the report. All meters selected this way are displayed in the section at the bottom left.
The **spin boxes** contain + and – as characters to include flow natures in the arithmetic expressions. For example, to calculate energy consumption by subtracting consumption from production.

OK

Creates the report in accordance with the settings and opens the "Preview" dialog box (see section below).

Note

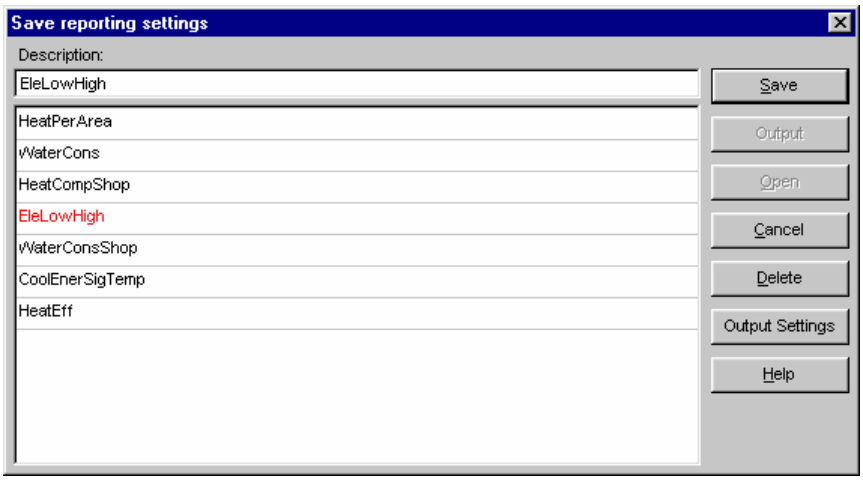
The preview dialog box only opens if the check boxes *General* and *Compare* are cleared.

Output

Prepares the report as per the current settings and opens the *Print Specifications* dialog box.

Cancel	Standard Windows functionality.
Report def.	Opens the *Report Definition* dialog box. This is where you define the units that have not yet been defined completely in the associated report template.
Views	Opens the *Report View* dialog box. This is where you define the type of graph and the associated options. **Graph type** is a drop-down list box to define the type of graph; Pie chart, 3D pie chart, bar graph, 3D bar graph, line graph, energy signature, tape graph and No graph. **Graph options** enables you to control various graph parameters by means of check boxes.
Condition	Opens the *Conditions for* dialog box that enables you to specify various criteria for the report's text fields.
Settings	Opens the *Save reporting settings - Reporting for:* dialog box. Allows you to save the current settings under a different, specific name.
Help	Standard Windows functionality.

Saving the report settings



8713o54en: The Save the report settings – Reporting for: dialog box

OK	Saves the current settings after you type in the file name.
Output	Not available.
Open	Not available.
Delete	Deletes the currently selected settings from the table.
Output settings	Opens the “Output settings for” dialog box which allows you to define the type of output (print (without printer settings), save as *.xls/*.html) as well as the selections (node, views, meter report) prior to saving the report settings.
Cancel, Help	Standard Windows functionality.

7.6 Printing/exporting reports

In the *Start* window

Select: Select node | right-click | REPORTING

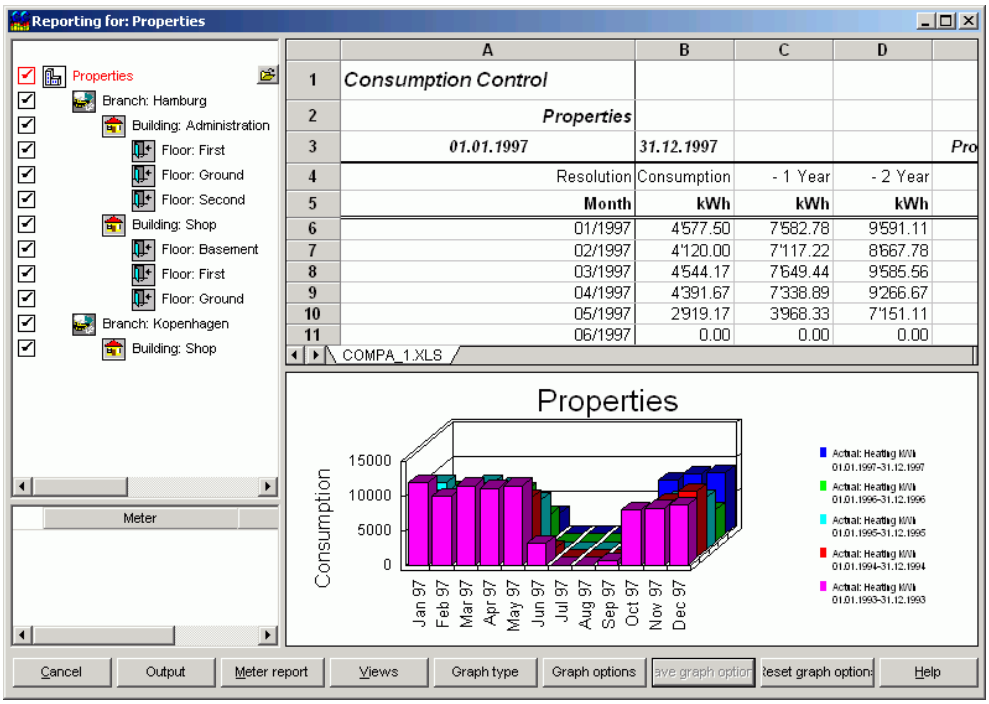
Note Instead of sending a print command to the printer, clicking [OK] in the *Reports for:* dialog box creates a "Preview" that allows you to change the report print.

In the *Reporting for:* dialog box

[OK]

Note Processing may take several minutes.

The Reporting for: dialog box then displays the calculated report.



8715o55en: The *Reporting for: Hamburg* dialog box (calculated report)

Displaying the calculated data relative to any level

Left section of the dialog box The left section of the dialog box displays the level for which you have selected the "Reporting for" function. However, CC automatically calculates the values for all lower levels. You can select one of the displayed levels and immediately obtain the associated evaluation by selecting the check box.

Right section of the dialog box The data is displayed both as a table and a graph by applying the settings you selected. As a basic display, CC shows the table at the top and the associated graph at the bottom. You can change the ratio between the table and graph by dragging the boundary. The graph is adjusted proportionally.

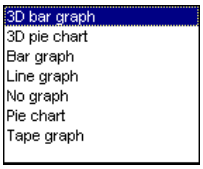
Output Prepares the report as per the current settings and opens the ***Print Specifications*** dialog box.

Graph type

Opens a drop-down list box containing the graph type selection.

Note

You can change the graph display only in this location, provided the graph options were not changed via the graph options (i.e., the buttons **[Save G.Opt.]** and **[Output G.Opt.]** are not available!).



8713o92en:
The *Graph type* drop-down list box

Graph options

Opens the *Graph Options* dialog box with the *Style, Titles, Fonts, Markers, Legend, and Labels* tabs. After making changes in any one of the six tabs, the **[Save G.Opt.]** becomes available.

Save G.Opt.

All changes to the six tabs of the graph options are saved. After saving the changes, the **[Reset G.Opt.]** becomes available.

Reset G.Opt.

This button is available when you change or save graph options during a session. This button allows you to restore the original graph settings.

Note

This button remains available also during new sessions, which allows you to restore the original state at any time.

Views

Allows you to graphically adjust the report.

Meter report

Allows you to directly open the main dialog box for meter reports (see "Creating a meter report").

Note

The [Meter Report] button is available only if at least one meter is listed in the *Meters* dialog box (bottom left).

Cancel, Help

Standard Windows functionality.

Note

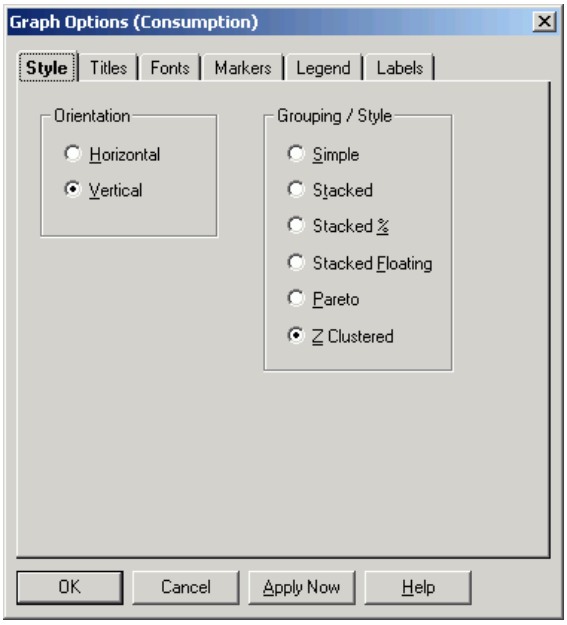
All (calculated) values except real values of meters (One Value Type Columns) are displayed in *Italics*.
Exception: Calculated values with real values of the *'Main' tag* of price models are displayed normal.

7.7 Graph option [G. Opt.]

7.7.1 Introduction

Design

The dialog box contains six tabs:



8713o93en: The *Graph Options* dialog box

Tab	Function
Style	Controls the graph display.
Titles	Text entry for graph labels.
Fonts	Controls fonts.
Markers	Controls graph elements such as lines, symbols, etc..
Legend	Entry of texts and position of legend.
Labels	Controls the axis label layout.

OK

- Takes over all parameters set in the tabs for the current graph and closes the dialog box.
- The settings are *not* saved.

Cancel

- Cancels all changes in the tabs and closes the dialog box.
- Changes to [Close] if *at least one* change was made in one of the six tabs.

Close

- Is available if *at least one* change was made in one of the six tabs.
- Takes over all parameters set in the six tabs for the current graph and closes the dialog box.
- The settings are *not* saved.

Apply Now

- Applies to changes made in the six tabs to the current graph and does **not** close the dialog box.
- The settings are *not* saved.

Help

Standard Windows functionality.

Context sensitivity

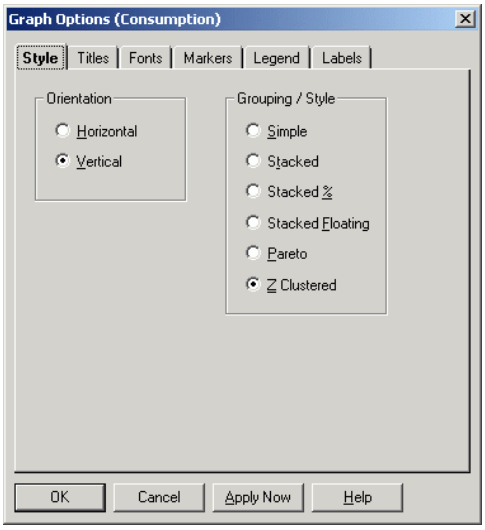
The contents of each tab match the current graph. This allows you to individually set the parameters for each graph.

Examples

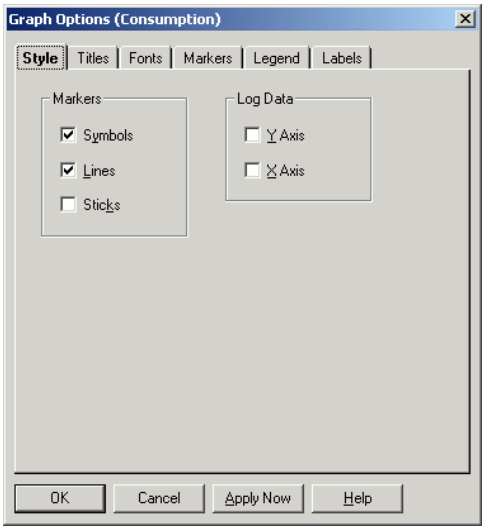
The following examples show the possibilities to create a three-dimensional bar graph, which is one of the most common graphs. (We will not describe all possible options (about 36)).

7.7.2 Style

The Style tab allows you to change the style of the selected graph.
The explanations below refer to the graph on the left (3D-bar chart).



8713o93aen: The *Style* tab
Application for a 3D bar chart



8713o93ben: The *Style* tab
Application for a 2D line chart

Orientation

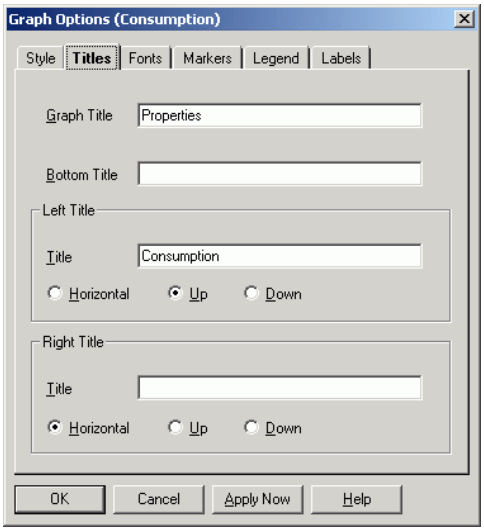
Allows you to show the data horizontally or vertically (vertically is the preferred layout).

Grouping/Style

Allows for various layouts such as

- Simple
- Stacked
- Stacked %
- Stacked Floating
- Pareto
- Z Clustered

7.7.3 Titles



8713o93cen: The *Titles* tab

This tab allows you to assign

- a graph title
- titles for the x, y, and 2.y axes.

In addition, the *Fonts* tab allows you to change the font type and size. There are two ways to accomplish this:

- **Smart Size** – Automatically adjusts the font size when you increase/decrease the graph.
- **No Smart Size** – Enter an absolute value for the font size. This value is not changed when you resize the graph.

Graph Title

Allows you to type in a title for the graph.

Bottom Title

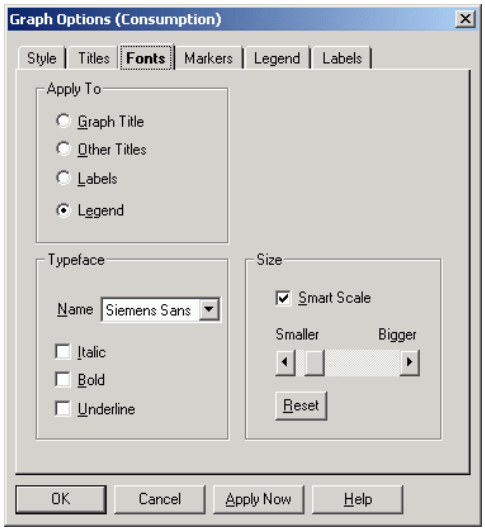
Allows you to label the x-axis in a graph.

Left Title – *Label for primary axis*
Right Title – *Label for secondary axis*

Type in the label for the primary axis (1. y-axis), or the secondary y-axis (2. y-axis) for the graph. At the same time, select the text direction:

- Horizontal
- Up
- Down

7.7.4 Fonts



8713o93den: The *Fonts* tab

The Fonts tab allows you to assign fonts to label the graphs.

Apply to

This group box allows you to define the **Typeface** and **Size**. The option buttons

- Graph Title
- Other Titles
- Labels
- Legend

allow for differentiated assignment.

Typeface

Use this group box to select the desired font.

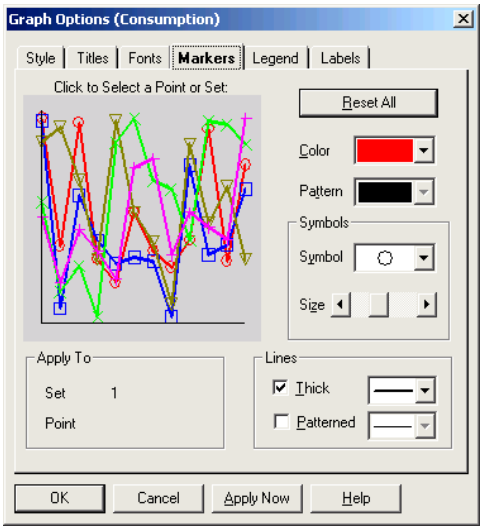
Size

Use this group box to specify the font size. Note the possibility of Smart Scale – *Intelligent font size adjustment:*

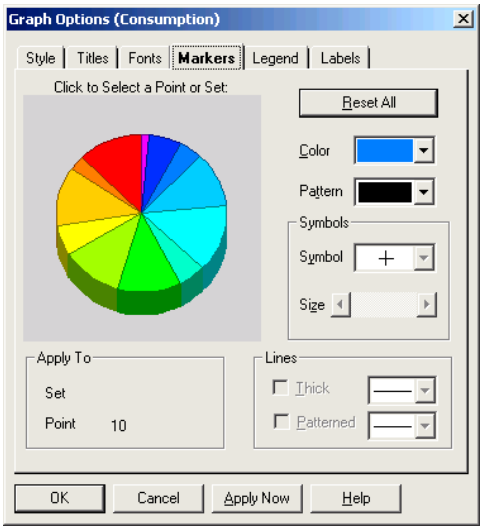
- If Smart Scale is selected, CC automatically adjusts the font sizes in a chart in dependence of the total chart size and by considering economical and esthetic viewpoints.
  Of course, you can specify a basic size by using the slider Smaller-Bigger.
- If you do not select Smart Scale, you can specify an absolute font size via **Smaller-Bigger**.
- **Reset** allows you to reset the font size settings.

7.7.5 Markers

The Markers tab allows you to assign symbols to the data points in a graph.



8713o93een: The *Markers* tab
Application for a 2D line chart



8713o93fen: The *Markers* tab
Application for a 3D pie chart

Restrictions

Assigning data point symbols is restricted to meaningful usage (e.g. it does not make sense to add symbols to a 3D bar chart).

Reset All

When you click this button, all default settings for this tab and the current graph are reinstated.

Apply To

This group box shows the following depending on the graph type:

- **Set** – The data set used to graphically edit the line, area, or bar chart.
- **Point** – The data set used to graphically edit the pie chart.

Color, Pattern, Symbols, Lines

These option buttons allow you to adjust the data set for the given graph type.

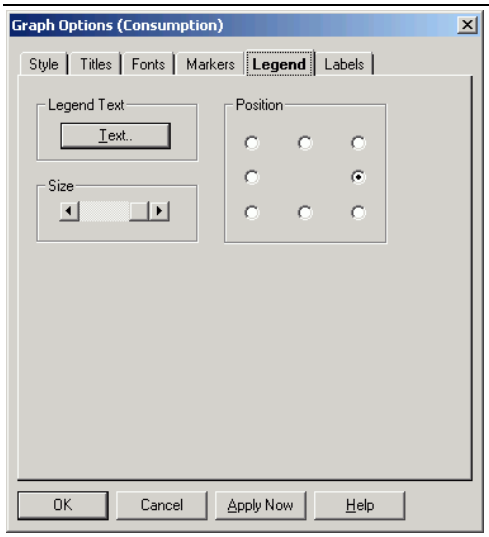
Important

Templates and reports define certain properties. In the case of a graphical data layout, the reports define the symbols and colors for the graphs!

If, for example, you use the same report to display chilled water and to display heating oil, the colors and symbols for the media (or value types) are the same.

This is true even if two automated processes in sequence show chilled water and heating oil.

7.7.6 Legend



8713o93gen: The *Legend* tab

This tab allows you to

- Enter legend text
- Enter the size of the legend (font and graphic)
- Position the legend relative to the graph.

Legend Text

Click the Text button to open a dialog box that allows you to enter legend text. CC provides one text field per data set.
The line break within a text sequence is inserted automatically; manual line breaks are not possible.

Size

Specify the font and graph size in the legend.

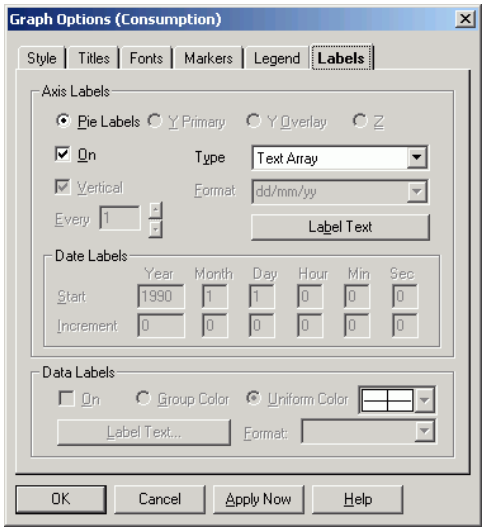
Position

Select one of the option buttons to position the legend at this location in the graph (graph border).

Note

The selection options for size and position influence the chart display. For this reason, check your selection by clicking [Apply Now] prior to making your final settings.

7.7.7 Labels



8713o93hen: The *Labels* tab

This tab allows you to define labels for

- Axes
- Date increments
- Data series (and data points)

Axis Labels

This group box allows you to label all axes in the chart and specify the date increments:

- **X, Y Primary, Y Overlay, and Z axis.**
  These options allow you to assign alphanumeric labels or a date to the respective axis.
- **On**
  Check box to select the label/date display for the axis.
- **Vertical**
  Check box to vertically position text along the vertical axis (primary, secondary y-axis).
- **Every**
  The number selected in this field specifies the increment to be applied (3 = every 3rd., etc.).
- **Type**
  This drop-down list box allows you to select the type of label, for example:

Numeric
Text Array
Date
Time
Date and Time
Date Skip Weekend

The Axis Labels group box also contains the Date Labels group box *(next page):*

Date Labels

This group box allows you to define the date display. CC differentiates between:

- Start – *Start date* for the date display.
- Increment – *Increments* applied to the date display.

Note

The display and the settings options in this group box vary according to the type of label selected in the Type drop-down list box.

To define a display:

1. select the desired date from which labeling is to begin in the **Start** fields, specify the **Increment** (time intervals) used to label the axes.

Data Labels

This group box allows you to label or design the label for the data points in the graph:

- Select the On check box to display data point labeling.
- Label Text

7.8 Report output

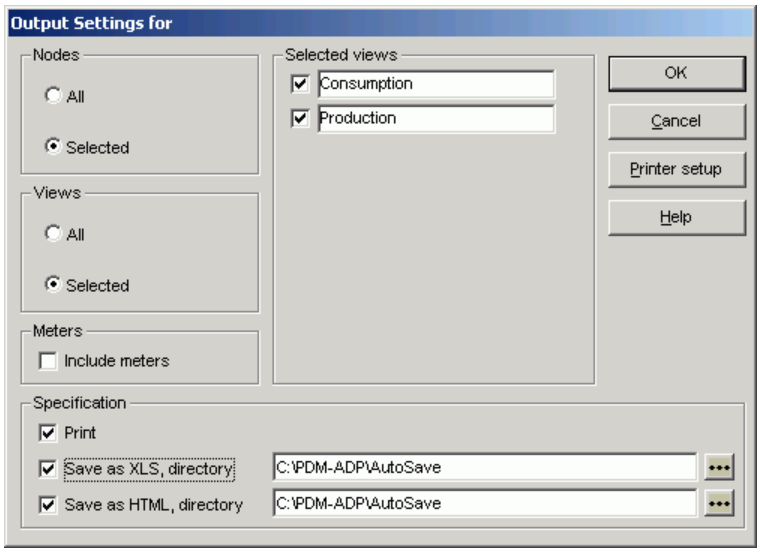
CC offers three formats to view a node or meter report on screen or print it:

- Print
- Microsoft Excel
- HTML

You can trigger the output from different locations:

Dialog box	Button	Remarks
Report Settings	Output	For preparation only
Report Settings	Output	Direct output
Reporting for: before the calculated report	Output	For preparation only
Reporting for: after the calculated report	Output	Direct output

7.8.1 Output (for preparation)



8713o56aen: The *Print Options* dialog box (preparation)

Nodes
All, Selection

This selection allows you to define the nodes that are to be part of the report output.

Views
All, Selection

Select the check box	Action
All	All views assigned are used for output.
Selection	The views selected in the "Select Views" group box are applied to the output.

Print reports

Select the check box if you also want to print meter reports.

Selected views

If you select one of the check boxes in the "*Selected views"* area, you can define the layout for the report printout.

OK

Starts report output.

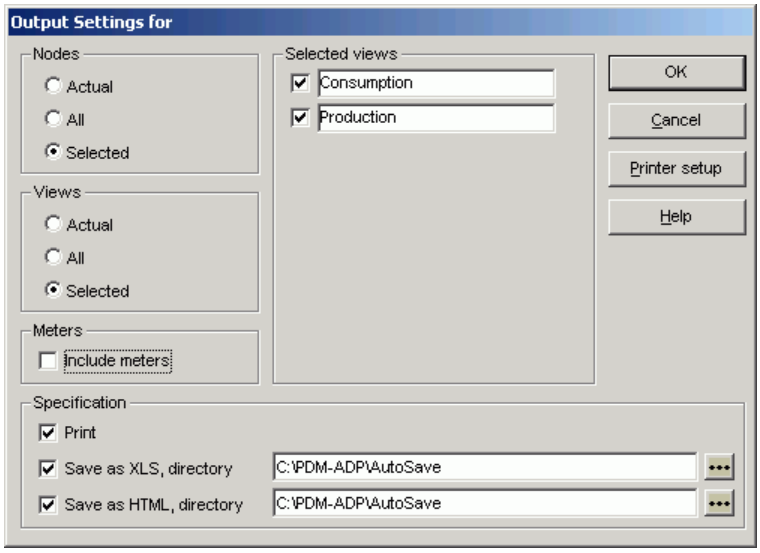
Print — Prints the reports to the selected printer.

Save as *.xls — Saves reports in the Microsoft Excel file format to a specified folder. If you select the check box, the storage path is displayed. Clicking ... allows you to browse the folders.

Save as *.html — Saves reports in the *.html file format to a specified folder. If you select the check box, the storage path is displayed. Clicking ... allows you to browse the folders.

Cancel, Help — Standard Windows functionality.

7.8.2 Output (for preparation)



8713o56ben: The *Print Options* dialog box

Nodes
Current, All, Selection — This selection allows you to define the nodes that are to be a part of the report output.

Views
Current, All, Selection

Select the check box	Action
Current	The view active during report creation is used for output.
All	All views assigned are used for output.
Selection	The views selected in the "Select Views" group box are applied to the output.

Print reports — Select the check box if you also want to print meter reports.

Selected views — If you select one of the check boxes in the "*Selected views"* area, you can define the layout for the report printout.

OK — Starts report output.

Print — Prints the reports to the selected printer.

Save as *.xls — Saves reports in the Microsoft Excel file format to a specified folder. If you select the check box, the storage path is displayed. Clicking ... allows you to browse the folders.

Save as *.html — Saves reports in the *.html file format to a specified folder. If you select the check box, the storage path is displayed. Clicking ... allows you to browse the folders.

Cancel, Help — Standard Windows functionality.

7.8.3 Creating reports – Summary

Useful information

The example below assumes that you want to view a report on screen. Once on screen, you can specify the output format (*.html, Microsoft Excel, or printer).

Step-by-step procedure

Start window

1. Go to the desired folder in the CC Explorer.
2. Right-click the folder.
3. Select *Reports* from the drop-down list box.

Report Settings dialog box

4. Select the setting you want to apply to report creation.
5. Click **[Open].**
   The *Reporting for:* dialog box opens, which allows you to make all additional settings prior to creating the report.

Reporting for: dialog box

6. Specify the basic report parameters that can be defined in this dialog box.
7. Specify the report contents in the *Report Definitions* [Reports] dialog box.
8. Define the graphical report layout in the *Views for Report:* [View] dialog box.
9. Click [OK] to create a report preview.

Reporting for: dialog box

10. Specify the detailed settings for the chart via [G. Options].
11. Save the settings via [Save G.Opt.] if you want to reuse this report.
12. In the Explorer, select the node for which you want to view the report.
13. Click [Output] to either print the reports, save them to Microsoft Excel, or as *.html files for the Internet.

7.9 Automatically printing reports

You can automatically print reports. This reduces waiting times for report creation and printing to practically nothing.

Principles on PDM

To automatically print a report, specify the report name and the desired node in PDM Autotask (depending on the report, this may result in an Autotask entry).

Procedures in CC

In CC, assign a name to the report. To this in the *Save reporting settings – Reports for:* dialog box. The reports can have any name.

Notes

The following applies to special characters and symbols in the Autotask entry (command line):

- If node names or report names contain spaces, use straight quotation marks instead in the Autotask entry. (Ex.):
  PDM/ADP/CC –n –p –h"Hamburg" –r"Heat...Efficiency"

If several nodes have the same designator, indicate the entire node path to select the correct node.

If you select a dimension designator, all nodes are included.

8 Meter reports

8.1 What are they?

CC allows you to create to different types of reports: **reports on nodes** and **meters**.

Meter report **Tabular display of the acquired raw data and the derived consumption for an individual meter or a group of meters.**

Node report **Evaluation of energy consumption and costs for any given node. The data is displayed in the form of a table or chart.**

Consumption Control is an object-oriented program. The meter reports you can create clearly demonstrate Consumption Control's high flexibility in terms of electronic data processing.

- A specific meter report definition—within the same structure—can be used several times, i.e., for each meter.

8.2 Preparatory work

Carry out the following steps to create a new meter report:

- If desired, create a Microsoft Excel template.
- Create a meter report definition.
- Select the desired meter and then select "Report" from the context menu.
- Select the associated meter report, resolution, and time period.
- Display and/or print the report.

8.2.1 Preparatory work on part of Siemens Building Technologies

The header of a meter report can, for instance, contain a title, column descriptions, or a company logo. Siemens Building Technologies creates the corresponding Microsoft Excel template.

8.2.2 Preparatory work on part of the system administrator

After creating a Microsoft Excel template, proceed to:

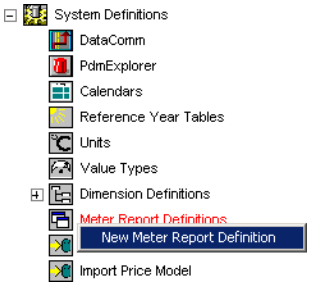
- create the meter report definition.

8.3 Creating a meter report definition

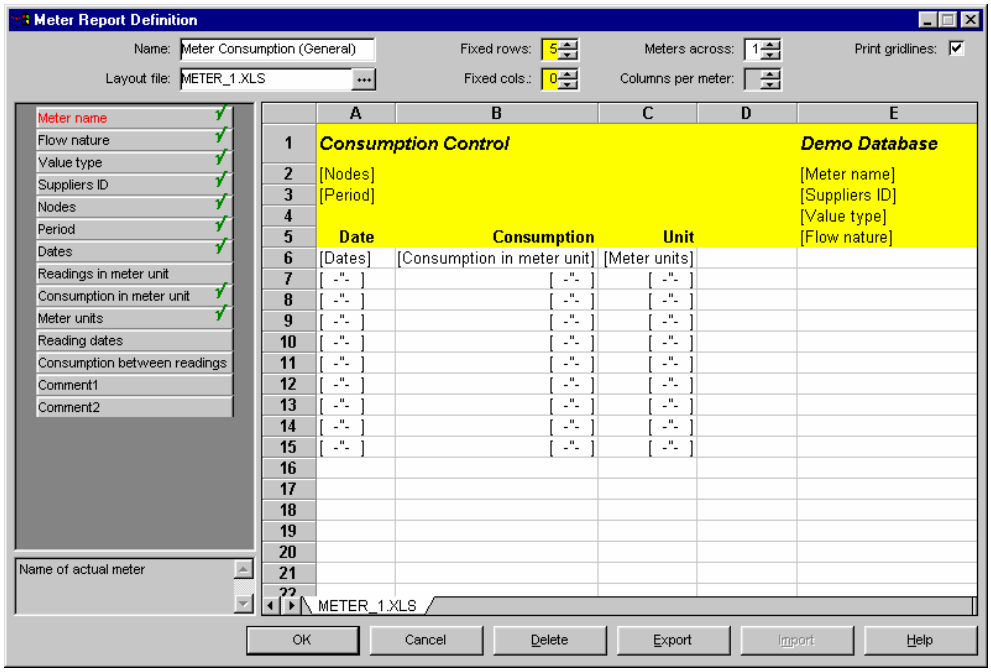
Select:

In the *Start* window

SYSTEM DEFINITIONS | METER REPORT DEFINITIONS | right-click | NEW METER REPORT DEFINITION



8713o57aen



8713o58aen: The *Meter report definition* dialog box

Top section of dialog box

Contains the name of the meter report definition, the name of the optional Microsoft Excel template, the *Fixed rows*, *Fixed cols, Meters across, and Columns per meter* fields as well as the *Print gridlines* check box to display or hide the gridlines in a report.

Fixed rows, Fixed cols. — Number of rows and columns that remain unchanged during scrolling.

Meters across — Specify in this field the number of meters to which you want to apply the selections (except "Fixed cols").

Columns per meter — Specify in this field the number of columns to be repeated for each meter.

Right section of dialog box

Consists of a spreadsheet similar to Microsoft Excel.

Left section of dialog box

Contains all available units that can be integrated in a meter report. You can drag and place these units onto the table as follows:

As **individual value** in a field in the fixed row area:

Meter name	Name of the meter
Flow nature	Production, Distribution, Consumption, and Other.
Value type	Value type to which a meter is assigned.
Supplier ID	Text from the meter definition.
Node	Node to which a meter is assigned.
Time span	Period for which the report is created.

As **column** through placement in the first row below the fixed rows:

Date	Date of the period, e.g. month, day, week.
Consumption in meter unit	Consumption within the above indicated period.
Readings in meter unit	Meter reading, first reading in the period.
Reading dates	Date for the above reading.
Unit	Unit valid for the indicated period.
Consumption between readings	Difference between meter readings.

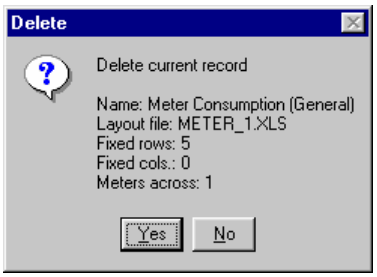
Export

Saves your own meter report definitions. The data is saved in a *.ccm file (standard Windows function to save the file).

Import

Imports predefined meter report definitions.
This button is available only when you open a new meter report definition.

Delete



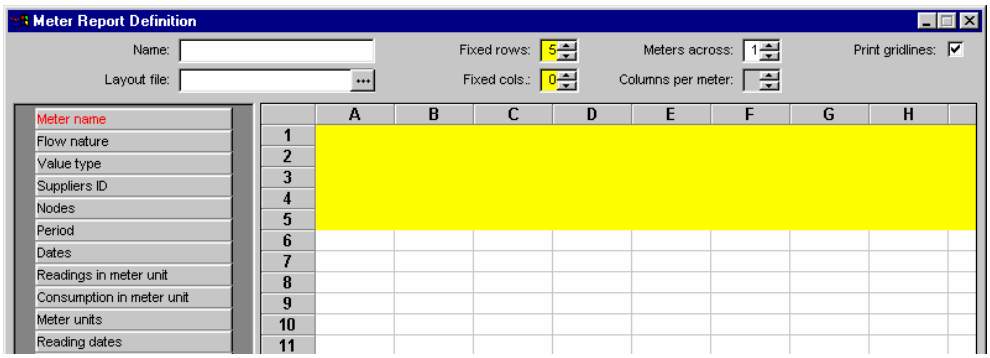
8713o94en: Delete *selected row* message

Deletes a meter report definition. Prior to deletion, a message appears for confirmation.

Creating a new meter report definition

Step-by-step procedure

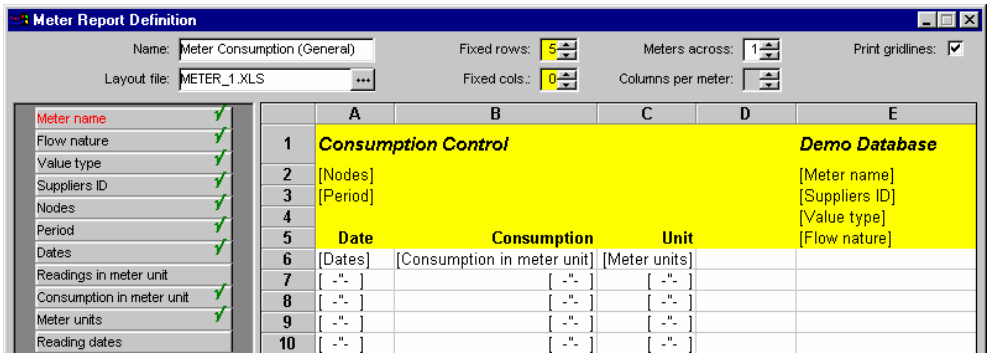
1. Type in the name of the new report definition in the Name field.
2. If required, specify the number of header rows for the report in the *Fixed rows* field.
3. If you do not want to print gridlines, clear the *Print gridlines* check box.
4. As an option, you can assign a Microsoft Excel template to the report definition. This may look as follows:



8713o58en: The *Meter report definition* dialog box (excerpt)

5. Click the button to the right of the *Layout file* field.
   A Windows dialog box opens. This allows you to select the prepared templates (Microsoft Excel 4, Excel 5, (and Excel 97, Excel 2000, Excel 2003, not native!)).

After you select a template, its layout appears in the spreadsheet section (right) of the dialog box. Complete the meter report definition, e.g., as follows:



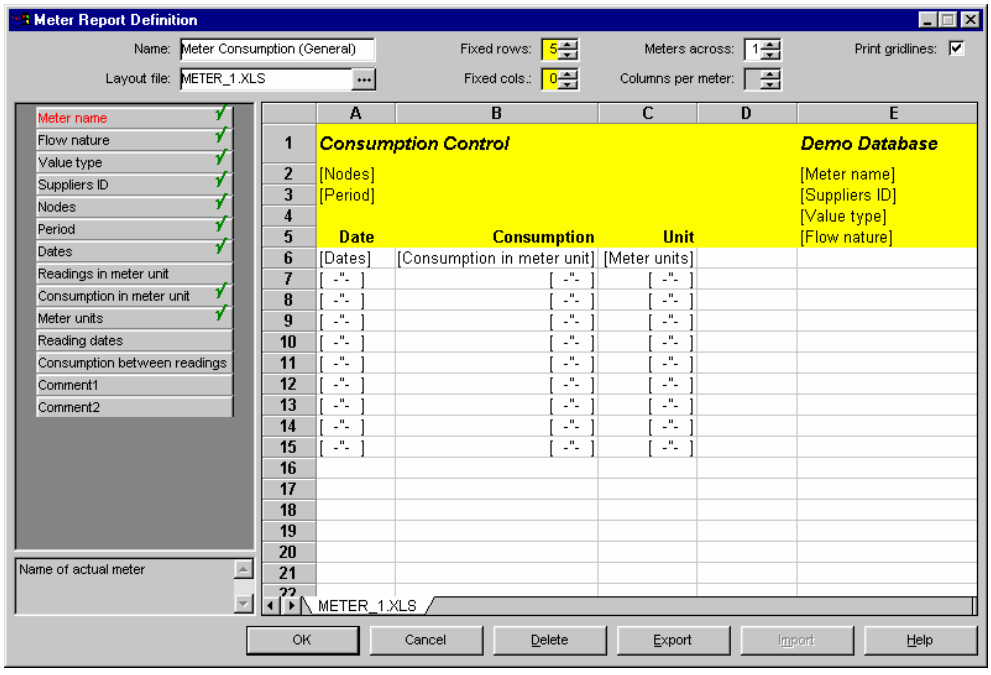
8713o58aen:The *Meter Report Definition* dialog box linked to a Microsoft Excel template (excerpt)

6. Change the contents of the report definition as desired. Use the <Delete> key to delete the cell contents.

7. Then define the contents for the new meter report definition.

8. Hold down the left mouse button and drag the variables you want to display from the left section of the dialog box to the desired location in the spreadsheet.
   Example below: The variable "Readings in meter unit" is dragged to row 6 of column 1 and thus takes up column 1.

The meter report definition is then supplemented as follows:



8713o58aen: The *Meter report definition* dialog box

Click [Save]. After you close the new definition, a symbol with the new definition name appears in the right section of the Start window.

8.4 Creating a meter report

After creating a meter report definition and the optional Microsoft Excel template, do the following:

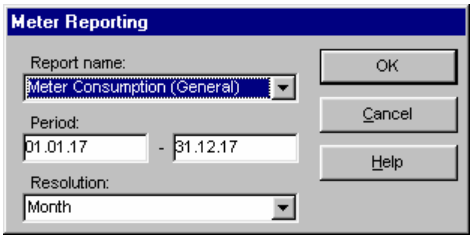
- Select the meter(s) and then *Reports* from the context menu.
- Select the associated meter report, resolution, and time period.
- Show and/or print the report.

8.4.1 Open the *Meter Reporting* dialog box

In the *Start window*

Select: **METER**

In the Start window, right-hand side section
Highlight meter | right-click | REPORTING



8713o60en: The *Meter Reporting* dialog box

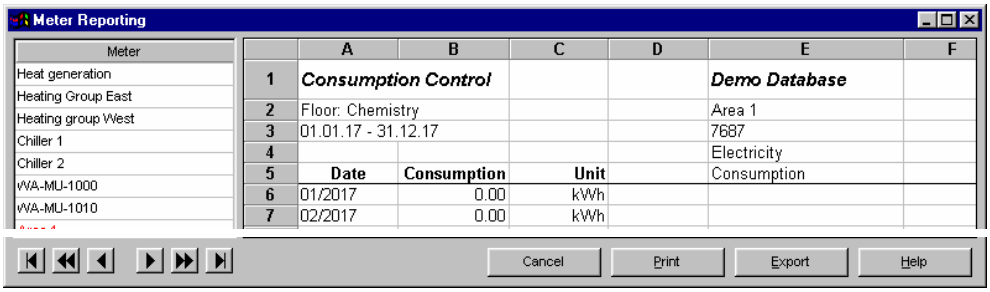
Select the following in the dialog box:

- Meter report name.
- Period for which you want to display data in the meter report.
- Report resolution (Day, Week, Month, etc.).

Click **[OK]** to display the meter report.

8.4.2 Outputting meter reports

When you click **[Print]**, the meter report is printed.



8713o61en: The *Meter Reporting* dialog box (excerpt)

Click **[Export]** to export the report to Microsoft Excel.

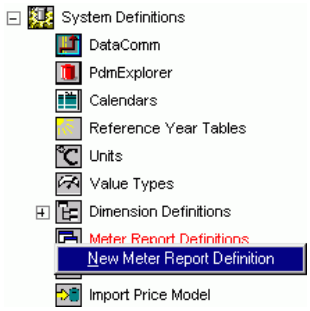
8.5 Creating reports with several meters

8.5.1 Creating a meter report definition for several meters

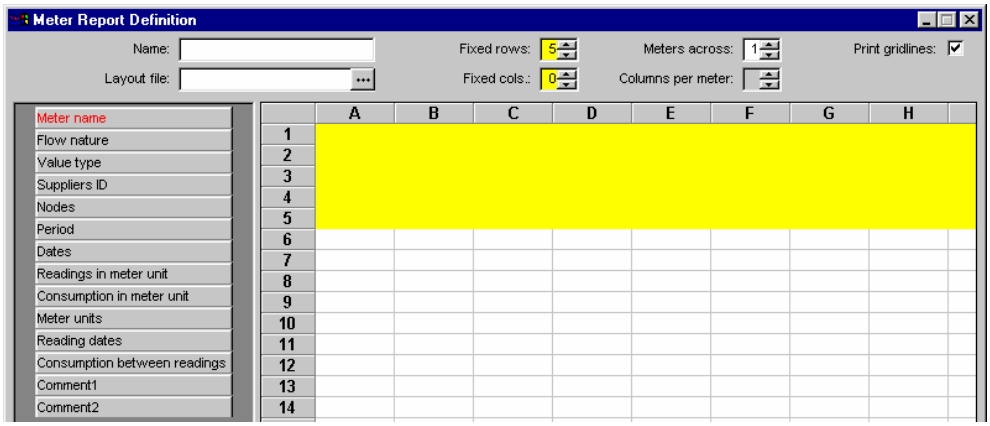
Proceed as described in "Creating a meter report definition":

In the *Start* window

Select: System Definitions | Meter Report Definitions | right-click | New Meter Report Definition



8713o62en



8713o59aen: The *Meter report definition* dialog box (excerpt)

Step-by-step procedure

1. Open the layout file (you can create a new layout file (Microsoft Excel) for this application beforehand).
2. Insert the parameters via drag and drop (e.g., date, consumption, unit).

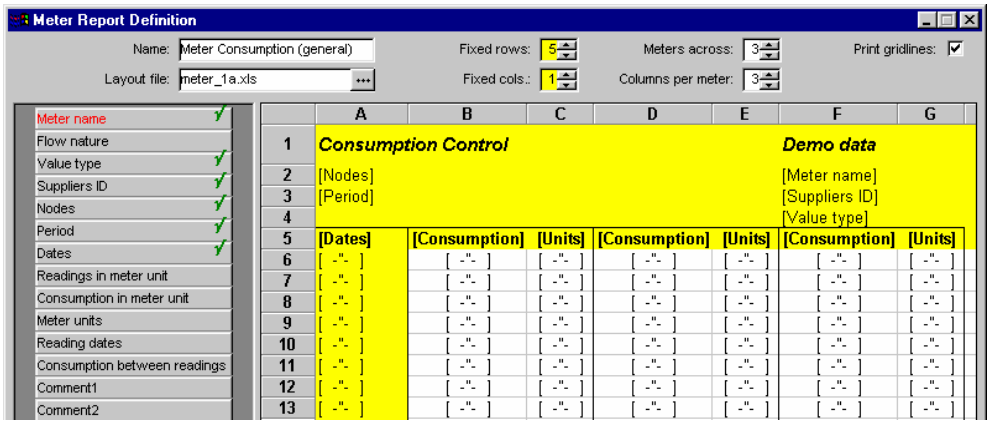
Note

The row containing the parameter designations does *not* appear in the report. It is used for displaying the associated values!

3. Define the column contents to be repeated as a number in the *Columns per meter* dialog box.

Tip

The *Meter report definition* illustration shows a simple, complete report definition based on the Microsoft Excel layout.



8713o63en: The *Meter report definition* dialog box with three meters(excerpt)

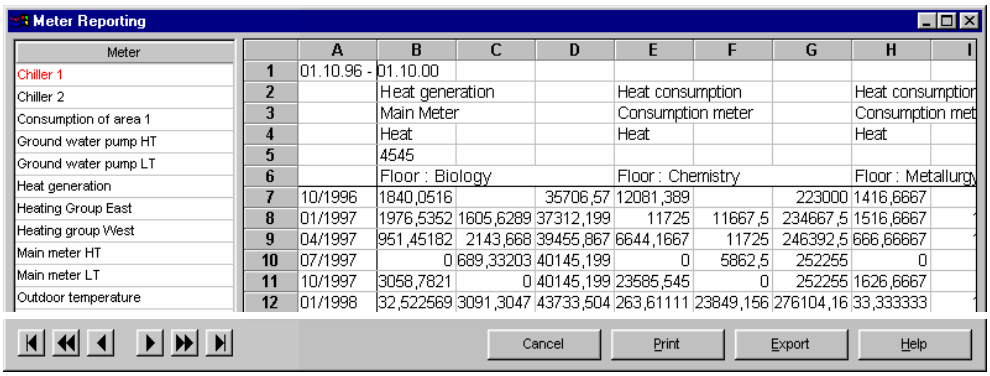
8.5.2 Creating a meter report with several meters

Start window

1. Double-click the *Meter* symbol.
2. Select the desired meter.
   The *Meter Selection* dialog box opens.

Manual Readings for: dialog box

3. Click [Meter Report].
   The *Meter Reporting* dialog box opens.
4. Select the corresponding layout file.
5. Click [OK].
   CC creates and opens the meter report.



	A	B	C	D	E	F	G	H	I
1	01.10.96 -	01.10.00							
2		Heat generation			Heat consumption			Heat consumption	
3		Main Meter			Consumption meter			Consumption met	
4		Heat			Heat			Heat	
5		4545							
6		Floor : Biology			Floor : Chemistry			Floor : Metallurgy	
7	10/1996	1840,0516		35706,57	12081,389		223000	1416,6667	
8	01/1997	1976,5352	1605,6289	37312,199	11725	11667,5	234667,5	1516,6667	
9	04/1997	951,45182	2143,668	39455,867	6644,1667	11725	246392,5	666,66667	
10	07/1997	0	689,33203	40145,199	0	5862,5	252255	0	
11	10/1997	3058,7821	0	40145,199	23585,545	0	252255	1626,6667	
12	01/1998	32,522569	3091,3047	43733,504	263,61111	23849,156	276104,16	33,333333	

8713o61aen: The *Meter reporting* dialog box with three meters(excerpt)

Tip The buttons with double arrows allow you to jump by exactly the number of meters displayed in the report.

6. Click the button to either print the report [Print] or export to a file [Export].

Tip You can automate meter reports only together with node reports (see "Report output" earlier in this document).

9 Calendar

9.1 What is it?

For forecasts, CC distinguishes between energy consumption on working days (full operation) and energy consumption on holidays (reduced operation).
Working days and holidays can also have different basic values.

Calendar

A calendar contains a definition for each day of the year with regard to working days or holidays [1,2].
Depending on the occupancy type, CC allows you to create several calendars. However, CC requires that at least one calendar be defined.

Typical examples for objects having different usage types or calendars are:

- Administrative buildings
- Sports gymnasiums and facilities
- Production facilities, etc.
- Swimming pools
- Kindergartens
- Schools

Note

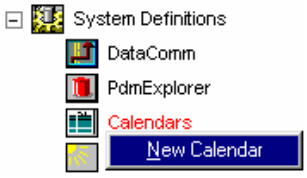
- Calendars are introduced in calculations and reports via forecast models.
- Each node of a dimension may have its own calendar. The corresponding calendar is selected via the reference variables in the node.
- Forecasts are possible only if calendars are assigned to dimension nodes !
- If you need a calendar with just slight changes to the original, we recommend that you copy the original and then make the changes to the copy.

9.2 Creating a new calendar

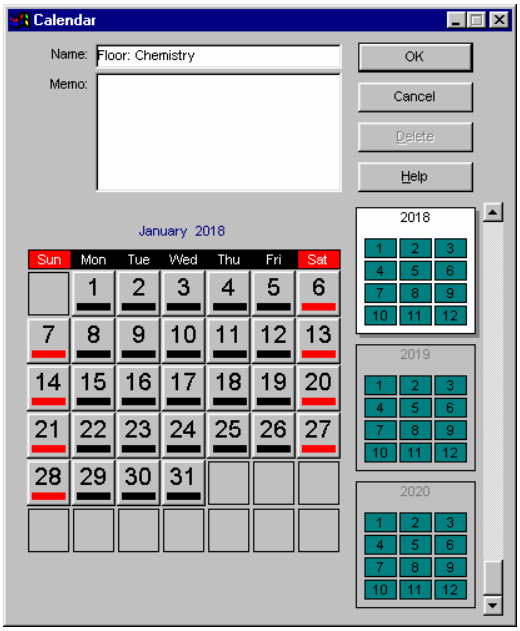
In the *Start* window

Select:

System Definitions | New Calendar | right-click | New Calendar



8713o65en



8713o66en: The *Calendar* dialog box

Per default, the current month and year are displayed when you open the calendar.

The gridlines to the right stand for the months in the following sequence:

January	February	March
April	May	June
July	August	September
October	November	December

Tip: Month

Click the respective row to display the desired month.

Tip: Year

You can open a particular year via the vertical scrollbar to the right (three years are displayed at a time).

Meaning of colored markings

When you click the calendar fields several times, they assume the following colored markings:

Day field with black bar:
The respective day generally represents a working day in the calendar.

Day field with red bar:
The respective day generally represents a holiday in the calendar.

Black day field:
This marking has higher priority than bar markings. The respective day always represents a working day.

Red day field:
This marking has higher priority than bar markings. The respective day always represents a holiday.

9.2.1 Creating a new calendar

Step-by-step procedure

Start window

1. Open the *System Definitions* folder.

2. Right-click the *New Calendar* symbol.
3. Click *New Calendar* to confirm.
   The *Calendar* dialog box opens.

Calendar dialog box

4. Type in the name of the new calendar in the *Name* field.
5. Assign a status to the days: Working day, non-working day, or holiday. The following options are available:
   - Mandatory for particular days of the entire calendar.
     (Continue at step 6).
   - Mandatory for individual days of a year.
     (Continue at step 7.)

6. Define a specific working day, valid for the entire calendar**,** as a mandatory working day or holiday:
   6a. Select the desired working day.
   To do this, click the working day field *Sun… Sat*.
   6b. Click the working day field until the desired status is displayed.
   6c. Click [Save] to save the calendar.

7. Specify a particular day of the year as a working day, non-working day, or holiday:
   7a. Point to the respective day within the selected year or month.
   7b. Click the day field until the desired status is displayed.
   7c. Click [Save] to save the calendar.

10 Reference year table

10.1 What is it?

To establish long-term evaluations and comparisons, create a reference year table (comparative values) containing the average values (e.g., heating degree days) over several years.

Reference year table (RYT)

Reference year values to forecast consumption.

The reference year table contains one value per day for a specific year.

Typical examples for reference year tables are:

- Heating degree day values to forecast energy consumption.
- Outside temperature.
- Daily production numbers in a production facility, etc.

Reference year tables (comparative values) are introduced in calculations and reports via forecast models (see forecast models). They must be assigned to nodes to take effect.

Note

You can only assign reference year tables if dimension variables of type "Ref. year values" are defined (see "Reference year values").

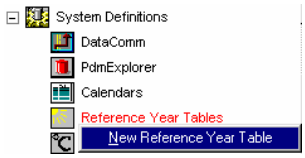
10.2 Creating new reference year tables

In the *Start* window

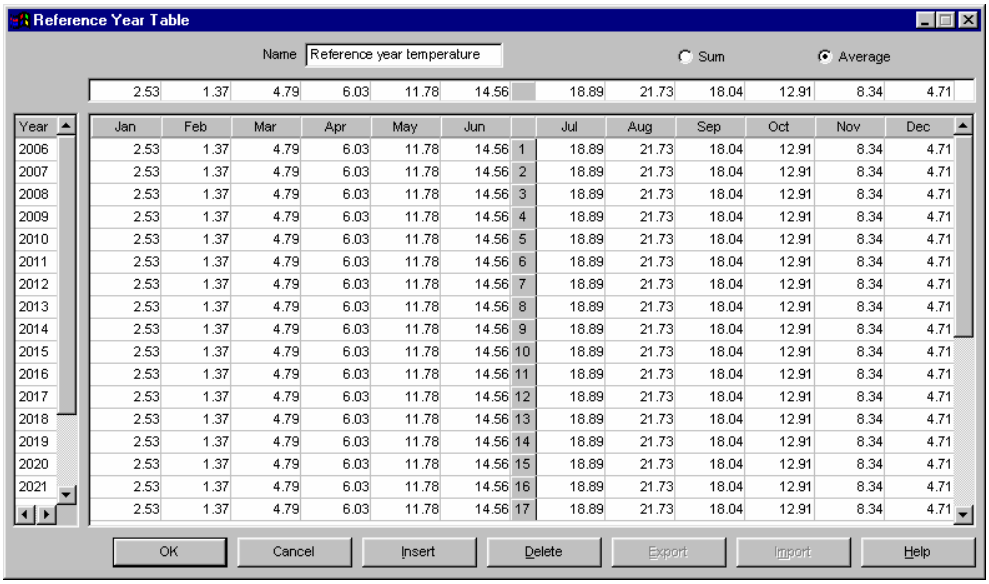
Select: System Definitions | Reference Year Tables | right-click | New Reference Year Table

Note

For reasons of clarity, the picture below shows a dialog box with an existing reference year table instead of an empty reference year table.



8713o67en



8713o68en: The *Reference year table* dialog box

Name — Name of the reference year table.

Year — Shows the year for which values exist.

Note

- All values available for the years listed in the table are included in the calculation function.
- If there are years missing, CC takes the values of the previous year.
- The year selected for editing (click) is marked in red.

Sum — The *Sum* option field determines the function of the month fields in the table header as follows:
Display: The month field displays the sum of all associated day values.
Entry: If you enter a number in the month field, the value is evenly distributed to the associated days of the month.

Mean value — The *Mean* option field determines the function of the month fields in the table header as follows:
Display: The month field displays the average for all associated day values.
Entry: If you enter a number in the month field, the value is evenly allocated to each associated day of the month.

Insert — Inserts an empty row in the *Year* column.
This enables you to create a new year table.

Delete — Deletes the highlighted year.
CC prompts you to confirm your choice and further checks any integrity conditions to ensure that you do not mistakenly delete a year.

Import	Imports a text file in numeric format (see the procedure later in this chapter). Text file format: ASCII (numeric characters only).
Export	Exports a text file in numeric format (see the procedure later in this chapter). Text file format: ASCII (numeric characters only).
OK, Cancel, Help	Standard Windows functionality.

10.2.1 Creating a new reference year table

Step-by-step procedure

Start window

1. Open the *System Definitions* folder.

2. Right-click the *Ref.year values* symbol.

3. Click *New Reference Year Table* to confirm.
   The *Reference Year Table* dialog box opens.

Reference year table dialog box

4. Type in the name of the new reference year table in the *Name* field.

5. Create a new year: Overwrite the "0000" row in the *Year* column with the new year, or point to the "0000" cell and click [Insert].

6. There are three ways to enter new values in the table:
   6a. If you want to enter **individual values for each day**, enter the numbers in each cell.

   6b. If you want to distribute a **sum over an entire month**, proceed as follows:
   - Click the ***Sum*** option field and
   - enter the total number in the field above the respective month.

   CC now distributes the values equally across the entire month.

   6c. If you already know the **daily average value for a specific month**, you do not need to enter this value 30 times. Instead:
   - Click the ***Mean*** option field and
   - enter the mean value in the field above the respective month.

   CC copies the average value to each cell of the respective month.

Note

- The Sum and Average option fields also work in reverse order. This means that values entered for every day are displayed as the sum or average in the field above each month.
- Leap years are not handled differently, i.e., reference year tables always comprise 365 days (no February 29). If a reference year table is applied to a leap year, CC applies the values for February 28 to February 29.

10.3 Importing external data in a reference year table

Importing data in a reference year table is relatively easy, provided the data has the required import format:

- The number of days to be imported may not exceed the number of days of the current year.
- The numbers must be available in ASCII text.
- Each number must be located in a separate row.
- All numbers must be floating point numbers.
- The import file cannot contain any other text.

Step-by-step procedure

1. Point to the desired field in a month column in the *Reference Year Table* dialog box.
2. Click [Import].
3. A dialog box opens. Type in the name of the file containing the values you want to import.
4. Select the file and click [OK].
   The numbers are imported in the reference year table.

Note

If the import file contains errors, the import process stops automatically.

Tip

If you made mistakes during data entry, click [Cancel] to close the dialog box without saving the changes. The original reference year table remains valid.

10.4 Exporting data from a reference year table

CC allows you to export data from a reference year table. The data is exported in ASCII code only. You can import the data exported from CC in any commercial program by assigning the corresponding **file extension** (e.g., **txt,** or **doc**, or test year.**xls**) to the export file.

Step-by-step procedure

Start window

1. Open the *System Definitions* folder.
2. Click the desired reference year table's symbol in the right section of the dialog box.

Reference year table dialog box

3. Point to the desired field in a month column of the current *Reference Year Table* dialog box.
4. Click [Export].
5. A dialog box opens. Specify the name and path of the target file (new file). It is sensible to, at this point, add the file extension.
6. Click [OK].
   The data is now exported to the specified target file.

11 Units

11.1 What are they?

To enable CC to carry out operating cost and consumption calculations, a unit must be allocated to each variable.

Define the units in the *Units* table. In addition, CC allows you to define a derived unit for each basic unit.

To do this, define the following:
- A conversion factor between the base and the derived unit.
- A conversion factor for both units.

Base unit

The unit which CC uses as the base unit for its calculations.

Typical examples for units are:
- Degrees °C
- kWh
- Beds (e.g. hospital patient beds)
- %, etc.

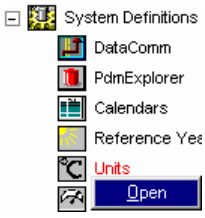
Note

- In reports, you can thus display units that differ from those originally used by the meters.
- Conversion occurs automatically according to the conversion factors for units and media.

11.2 Opening the Units table

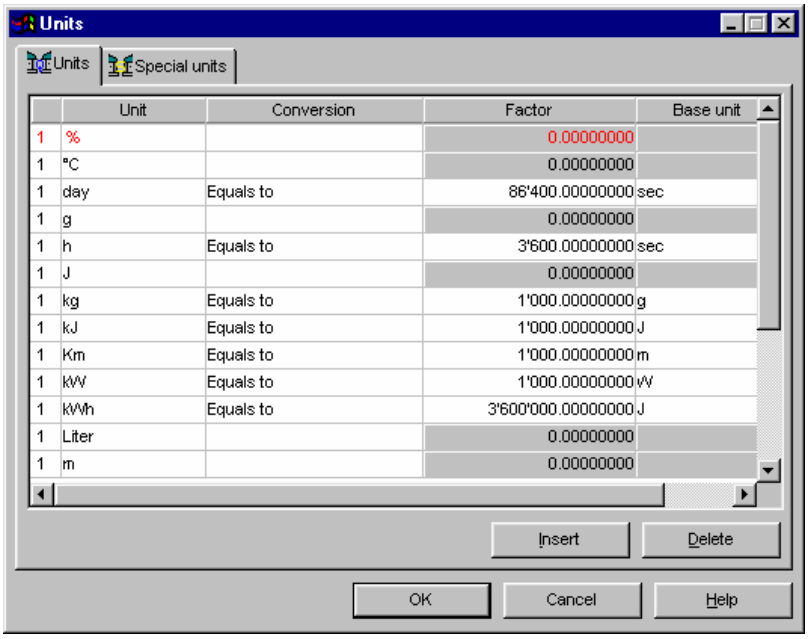
Select:

In the Start window
SYSTEM DEFINITIONS | UNITS | double-click



8713o69en

The *Units* tab



8713o70aen: The *Units* dialog box — *Units* tab

Unit

Designation used for the respective unit (%, °C, m², etc.).

Conversion

The relations for conversion can assume the following values:

Equal to means that a clear relationship exists between the base unit and the derived unit, defined by the factor.

Example: kWh converted to MWh.

Approximate means that only a remote relationship exists between the base unit and the derived unit, approximated by the factor.

Example: Liters of oil converted to kWh.

Note

If several relations exist between a meter and the target, the following priority applies:

Equal to
Relations via media
Approximate

"Approximate" is used only if there is no "Equal to" and if no medium conversion is found.

Factor

Conversion factor between base unit and derived unit.

Example: The [kg] unit is derived from the base unit [g] with a factor of 1000.

Base unit

The base unit is used to calculate the derived unit. See *Factor*.

Insert

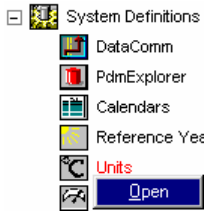
Inserts an empty row in the units list. This enables you to enter a new unit.

Delete

Deletes the selected unit.
CC prompts you to confirm your choice and further checks any integrity conditions to ensure that you do not mistakenly delete a unit.

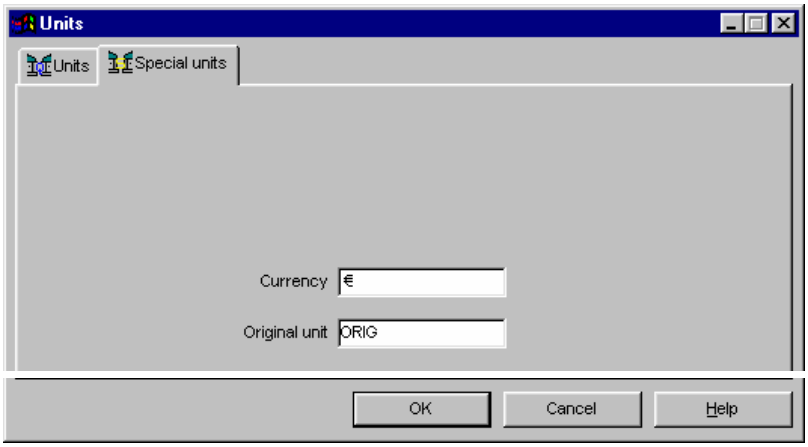
OK, Cancel, Help

Standard Windows functionality.



8713o69en

The *Special units* tab



8713o70ben: The *Units* dialog box — *Special Units* tab (excerpt)

Local currency

The local currency is the unit that CC uses as its general currency.

If the node report definition (see "Creating a customer report definition") provides a unit and if the local currency must be used, this currency is used.

Requirement: Price conversions are already defined in the price model of the associated medium (see "Assigning a price model to a medium").

Original unit

The original unit is the unit that is not converted anywhere in the system.

Example: If you want to specify a metric unit without converting it to one of the metric units used in the system.

11.3 Creating a new unit

Step-by-step procedure

In the *Units* dialog box

1. Click [Insert].
   A new row is inserted in the list above the highlighted row.
2. Type in the name of the new unit in the *Unit* column. Try to be as brief as possible.

3a. If you want the new unit to serve as a base unit, your entry is complete at this point. Click [Save].

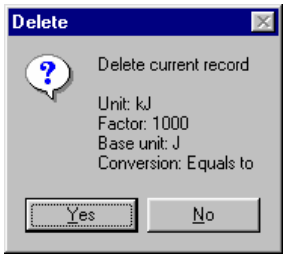
3b. If, however, the new unit is to be derived from an existing base unit, proceed as follows:

In the *Conversion* column, open the drop-down list box and select one of the listed relationships.
Open the drop-down list box in the *Base unit* column and select the unit which you want to use as the base for the new unit.
In the *Factor* column, indicate the conversion factor between the base unit and the new derived unit.
Example: If MWh is defined as a new unit and kWh is the base unit, the factor is "1000".
Click [Save].

11.4 Deleting a unit

Step-by-step procedure

1. Select the respective unit.
2. Click [Delete].
   The following message is displayed:

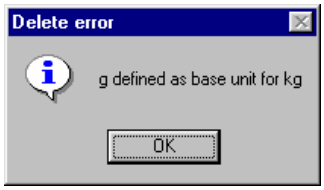


8713o72en: The *Delete* dialog box

3. Acknowledge the above dialog box as appropriate.

Note

You cannot delete a unit that serves as a base unit for any other unit. If you try to do this, the following error message is displayed:



8713o73en: The *Delete Error* dialog box (1)

Accordingly, you cannot delete units referenced by the system. If CC allowed for this, data integrity would be violated.

8713o74en: The *Delete Error* dialog box (2)

12 Models & curves for forecasting

12.1 What are they?

CC supports two types of models for calculations:

- **Price models**, which are used to calculated the cost for consuming a certain medium (oil, electric energy, etc.).
- **Forecast models**, which are used to compare current consumption to the forecasted consumption.

This chapter discusses the forecast models. Price models are described in the "Media and prices" section.

Why use a forecast model?

- Comparing current and forecasted consumption allows you to adequately assess current consumption and introduce associated operational measures.
- Report periods can be supplemented with estimates.

Forecast model

Element that comprises all rules to create a forecast for a certain value type (e.g. heat) in relation to a node (e.g. an existing building).

Forecast models always reference a specific value type and must be allocated to a node.
Restriction: **You can use f**orecast models used within a single dimension.
Typical examples for forecast models are:

- Energy consumption as a function of degree days.
- Energy consumption as a function of the outside temperature, etc.

Curve

Function that extends a forecast model.

In forecast models, curves are always used to calculate future consumption:

- In dependence of weather (e.g., outside temperature) or, in other words, as a function of any variable.
- In dependence of the seasons, i.e., as a function of the current month.

In both cases, you can additionally differentiate between working days and holidays.

What you should know about forecast models and curves.

Forecast models comprise general rules that can be applied to several nodes.
Curves normally comprise node-specific information. They are always assigned to a value type.

The **forecast model** only contains a formula and possibly the curve type permissible for the respective model. In order to calculate forecasts, the model must be allocated to a specific node and the respective value type. Concrete values can be assigned to the various variables of the model only upon this allocation. When you want CC to calculate a forecast value, a check is performed to see if the respective node has a forecast model allocated to the associated value type for the desired day. If this does not apply, CC looks for a valid model in the next higher dimension and continues to work with this model.

12.2 Preparatory work

Carry out the following steps to use forecast models.

- Create the forecast model.
- In the forecast model, define the elements (constants, data sources, value types, curve types) to create a formula. The formula is used to calculate future consumption.
- Link the forecast model to a value type.
- Link the forecast model to a node.
- Assign concrete values to the various values of the model for the node-specific application.

12.2.1 Preparatory work on part of Siemens Building Technologies

As a first step, Siemens Building Technologies develops forecast models customized to meet your needs.

12.2.2 Preparatory work on part of the system administrator

After creating the forecast models, you must:

- Link the forecast model to a value type and to a node.
- Assign concrete values to the variables of the model.

12.3 Linking a forecast model to a node

As a second step, assign a value type to the forecast model. Proceed as follows:

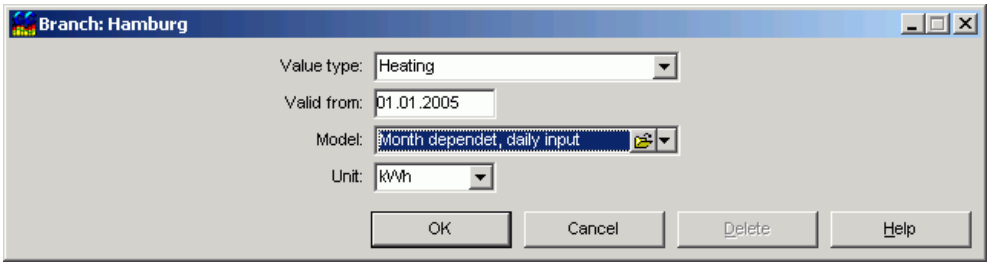
Prerequisite

To assign a forecast model to a value type, you must first define the values' distribution of the corresponding value type to subnodes.

Step-by-step procedure

Start window

1. Go to the desired node in the CC Explorer.
2. Right-click the symbol (Here: Property).
   A drop-down list box opens.
3. Select [New Forecast Model] from the drop-down list box.
   The *Property xyz* dialog box opens.



8713o77a: *Property xyz* dialog box

4. Select the value type from the drop-down list box.
   For this example, we select *Heating*, a value type for heating.
5. Type in the date from which the new model is to be applied in the *Valid from* field.
6. Click the *Model* field and select the appropriate forecast model from the drop-down list box.
   (monthly value curves for our examples; the available models depend on the value type selected).
7. Select the proper unit from the *Unit* list box.
8. Click [Save] to complete the entry.

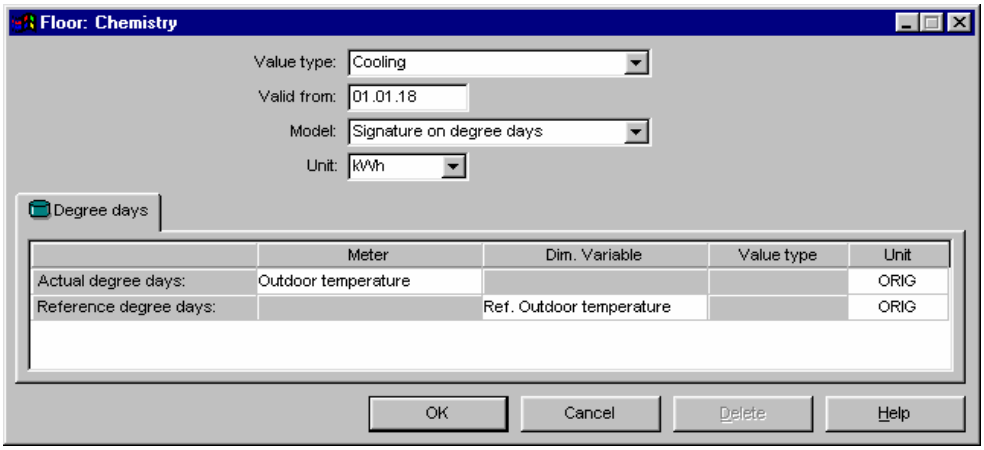
12.4 Linking a forecast model to node information

As a third step, assign the forecast model to the node.

Note

The forecast model is valid for all meters of the respective value type located in a hierarchically subordinate node, provided *Inherit* is selected for models.

The fields in the screenshot below depend on the constants defined in the forecast model as well as the data source. Our example contains a *Meter* field that is used to assign a meter to this model, and a *Dim.Variable* field to link to the reference table, which must be defined in the node.



8713o78en: The *Floor* dialog box

Tip

Proceed as follows to create a slightly different forecast model:

Step-by-step procedure

Start window

1. Go to the desired node in the CC Explorer.
2. Click the desired symbol (here: Property).
   The forecast model assigned to this node is displayed in the right section of the dialog box ("Heating" for our example).
3. Right-click the *Heating* symbol.
   A drop-down list box opens.
4. Select [Copy].
   This copies the "Heating" forecast model. You can easily recognize the copy by the date increased by one day as compared to the original.
5. Open the copy.
   (Right-click and select [Open]).

Dialog box

6. Make your changes and
7. Save the changes by clicking [Save].

12.5 Linking a curve, forecast model, and value type

Curves (curve characteristics) are used to enhance a forecast model.
As a fourth step, enter the extensions.

Note

Forecast models and the associated curves are located in the nodes (dimension elements). You can define the associated forecast model and curve for each node and value type. Possibly missing forecast models and curves are located in superior nodes, provided *Inherit* is selected for both models and curves.

Curves are always used when the future consumption to be calculated.

- Depends on weather (e.g. outside temperature) or, in other words, is calculated as a function of any variable.
- Depends on the seasons, i.e., as a function of the current month.

In both cases, you can additionally differentiate between working days and holidays.

Note

You can assign working days /non-working day via System Definitions, Calendar (see also section *Calendar*). Curves are always assigned to a value type.

Prerequisite for using curves:

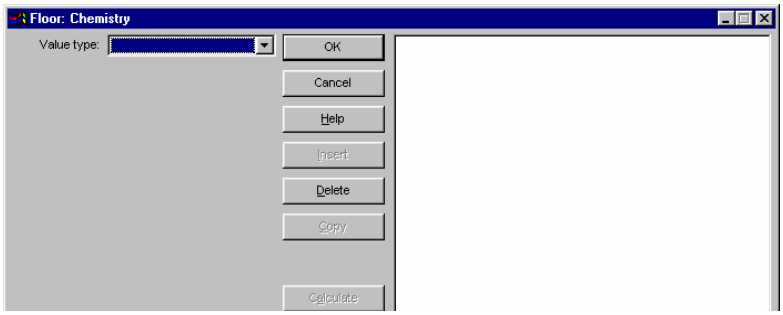
- When you define the value type, a specific curve type is defined.
- The forecast model used must allow for a curve of that type.

12.5.1 Assigning a curve to a value type

To do this, open the following dialog box:

In the *Start* window
Select: Select node | right-click | NEW CURVE

8713o79en

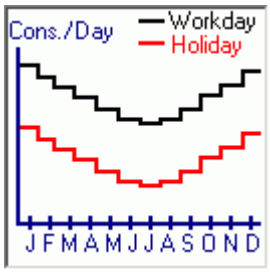


8713o80aen: Dialog box to create a new curve

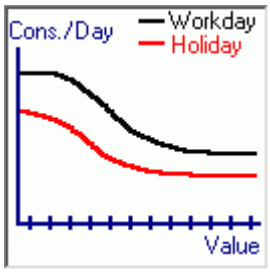
Note

You can assign three different forecast curve types to a dimension (that is a value type). See "Dimensions: Forecast tab":

- No curve
- Forecast model curve dependent on month.
- Forecast model curve dependent on value.



8715o80aen: Monthly curve



8715o80ben: Value curve

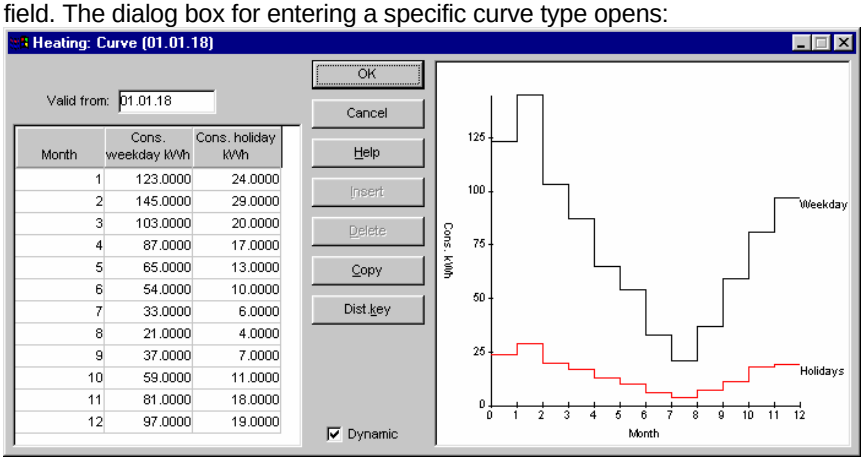
If you want to assign a value type to a curve, note the following when you select the curve:

- CC calculates the curve dependent on month based on the values entered via the [Distr.Key].
- CC calculates [Calculate] the curve dependent on values based on the model values entered (e.g. energy signature).

Step-by-step procedure (Monthly curve)

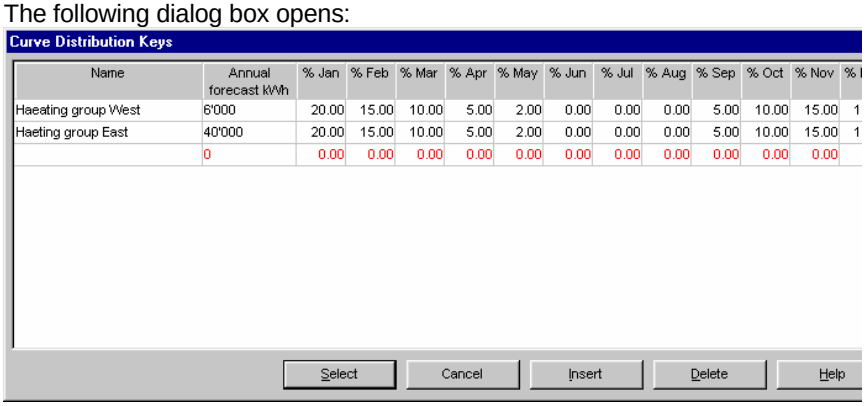
Start window

1. Go to the desired node in the CC Explorer.
2. Right-click the symbol (Here: Property).
   A drop-down list box opens.
3. Select [New Curve].
   The *Curve* dialog box for the node opens.
4. *Curve* dialog box (node)
5. Select the value type from the drop-down list box.
   For this example, we select *Heating*, a value type for heating.
6. Type in the date from which the new curve is to be applied in the *Valid from* field. The dialog box for entering a specific curve type opens:



8713o81aen: Dialog box containing the *text field for the new curve*

7. Click [Distr.Key] (distribution key).
   The following dialog box opens:



8713o81ben: The Distribution key dialog box (excerpt)

8. Click the desired group for selection.
9. Click [Select].
   CC calculates the corresponding curve.

Step-by-step procedure (Value-dependent curve)

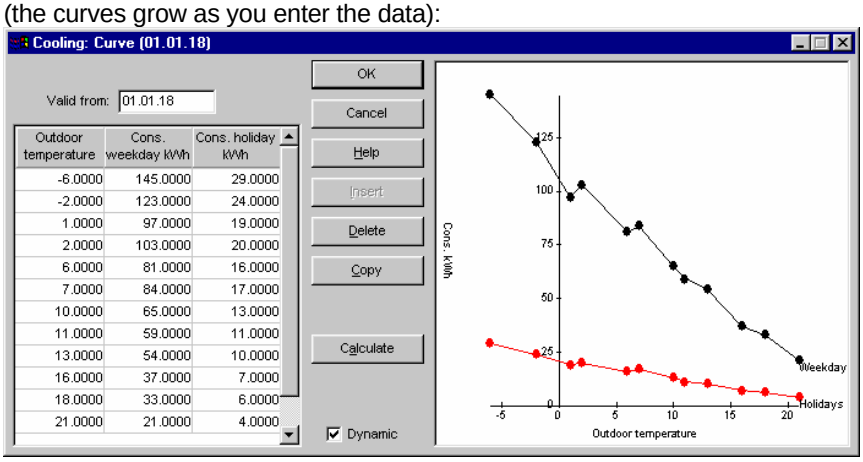
Start window

1. Go to the desired node in the CC Explorer.
2. Right-click the symbol (Here: Property).
   A drop-down list box opens.

3. Select [New Curve].
   The *Curve* dialog box for the node opens.

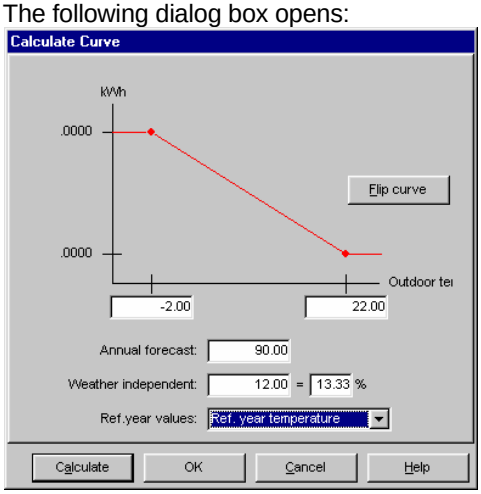
Dialog box

4. Select the value type from the drop-down list box.
   Here: Cooling. The dialog box to enter the x and y-axes for the curve opens (the curves grow as you enter the data):



8713o81cen: Dialog box containing the *text field for the new curves*

5. Click [Calculate].
   The following dialog box opens:



8713o82xaen:
The *Curve Distribution Keys* (heating characteristics) dialog box

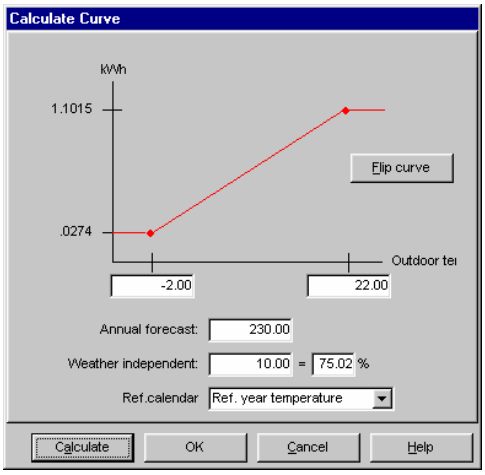
The heating characteristics are used to correctly calculate the auxiliary curve:

The lower the outside air temperature, the higher heating energy consumption.

6. Enter the corresponding data and click [Calculate].
7. Click [OK] to confirm the data.

Exchanging curves (change characteristics)

To change the characteristics, click [Change Curve]. After entering the corresponding parameters, click [Calculate].



8713o82xben:
The *Curve Distribution Keys* (cooling characteristics) dialog box

The characteristics are set to calculate the auxiliary curve for cooling:
The lower the outside air temperature, the lower the cooling energy consumption.

Note

The aux curve is calculated correctly if the proper characteristics are set!

Check steps 1 to 5 and proceed as follows:

6. Enter the corresponding data and click [Calculate].
7. Click [OK] to confirm the data.

Tip

Proceed as follows to create a slightly different curve:

Step-by-step procedure

Start window

8. Go to the desired node in the CC Explorer.
9. Click the desired symbol (here: Property).
   The forecast model assigned to this node is displayed in the right section of the dialog box ("Heating" for our example).
10. Right-click the *Heating* symbol.
    A drop-down list box opens.
11. Select [Copy].
    This copies the "Heating" forecast model. You can easily recognize the copy by the current system date.
12. Open the copy.
    (Right-click and select [Open]).

Dialog box

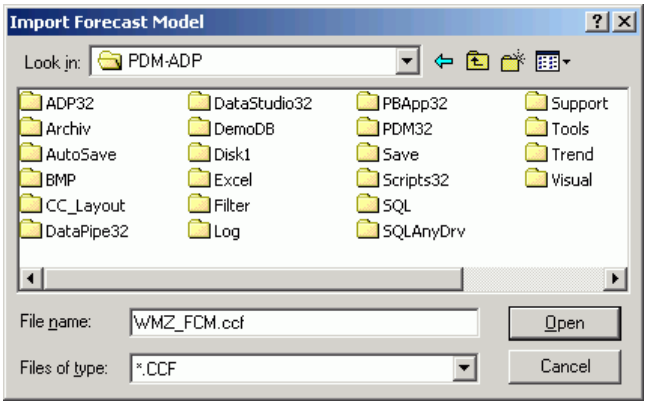
13. Make your changes and
14. Save the changes by clicking [Calculate] and then [OK].

12.5.2 Importing a forecast model

Proceed as follows to import a forecast model you already use in a different project:

In the *Start* window

Select: System Definitions | Import Forecast model | double-click



8713o83en: The *Import Forecast Model* dialog box

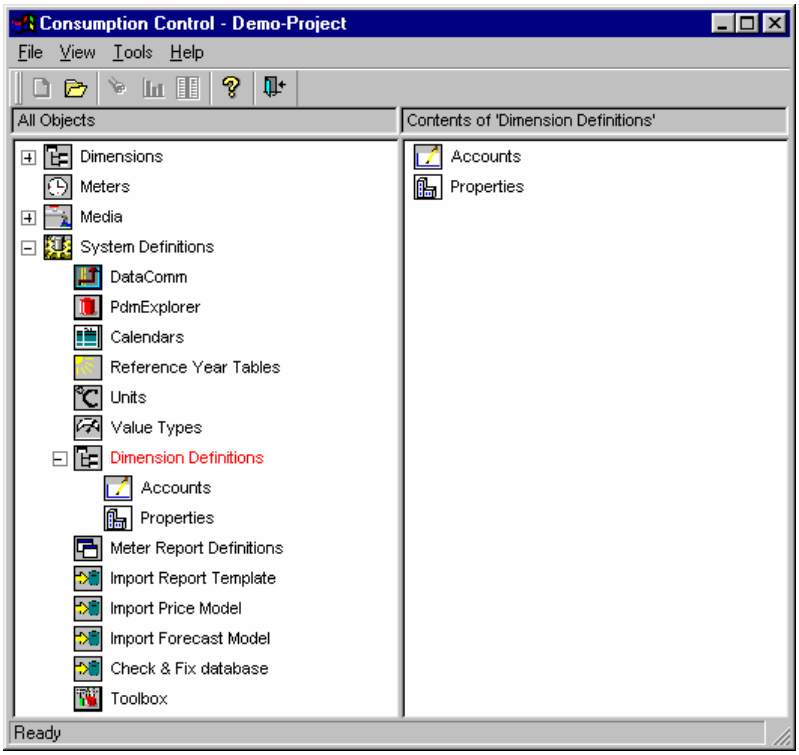
Note The forecast model must be saved in a compatible format.

13 Connecting CC to the PDM database

13.1 What is it?

CC derives its data from the PDM database. To maintain this database, CC provides link points to the functions listed below.

We recommend that only the system administrator perform this work. All functions are selected via the SYSTEM DEFINITIONS menu.



8713o84en: Start window excerpt with *System Definitions* submenu

13.2 Available PDM functions

13.2.1 DataComm

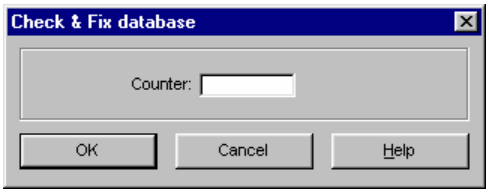
This program enables you to load VISONIK point information in the PDM database. Further information: PDM user's guide, CM2B8733en.

13.2.2 Checking and cleaning up the database

This function performs a check of the system database tables and corrects inconsistencies.

In the *Start* window

Select: System Definitions | Check and Fix database | double-click



8713o85en: The *Check and Fix database* dialog box

13.2.3 Toolbox

This function contains special tools to maintain and update PDM. Further information: PDM user's guide, CM2B8733en.

14 Glossary

Dimension variable

Allows you to translate energy consumption into conclusive units and display it in reports.

Typical examples for dimension variables are:
- Heated area in m^2 which serves to calculate energy consumption per m^2.
- Number of beds which serves to, for instance, calculate energy consumption per bed in a hospital.

Level

Hierarchically structured levels within a dimension.

Typical levels are:
- Within a real estate dimension: Property, building, floor, zone, and room.
- Within an organizational structure: Business unit, manufacturing area, department, cost center, etc..

Unit

The base unit CC uses for calculations.

Typical examples for units are:
- Degrees °C
- kWh
- Beds (e.g. hospital patient beds)
- % etc.

Value type

Means to summarize logical meters into one group when they are used to measure similar types of consumption.

Result: Subsequent report evaluation of energy consumption is primarily based on these value types.

Typical examples for value types are:
- High tariff electricity
- High temperature hot water
- Low tariff electricity
- Chilled water, etc.

Do not confuse the term value type with the term medium. A medium (e.g. oil or gas) is consumed to produce a value type (e.g. hot water).

Calendar

Defines each day of the year either as a working day or as a holiday.

Depending on the occupancy type, CC allows you to create several calendars. However, CC requires that at least one calendar be defined.

Typical examples for objects having different usage types or calendars are:
- Administrative buildings
- Schools
- Kindergartens
- Production facilities, etc.

Node

Object in a dimension or on a level.

Reports are always defined in general terms, but when printed, they always reference a specific node.

Typical nodes are for example:
- Within a building: Floor A, Floor B.
- On a floor: Room A, laboratory, class room Z.

Report

Evaluation of energy consumption and costs for any given node.

The data is displayed in the form of a table or chart.

Curve

Function to extend the forecast model.

In forecast models, curves are always used to calculate future consumption:

- In dependence of weather (e.g., outside temperature) or, in other words, as a function of any variable.
- In dependence of the seasons, i.e., as a function of the current month.

In both cases, you can additionally differentiate between working days and holidays.

Medium

Basic element (e.g. oil and gas) used to produce that which we want to provide (e.g. hot water).

The "thing" is called a value type.
Each medium is assigned to a meter.

Typical examples for media are:

- Public water supply
- Oil, natural gas
- Electricity, etc.

Do not confuse the term medium with the term value type. A medium (e.g. oil or gas) is consumed to produce a value type (e.g. hot water).

Price model

Rules to calculate the supplier cost for a medium based on its consumption.

Each price model is assigned to a medium.

Typical price model, for example, are for

- Oil
- High-tariff electricity, Low-tariff electricity, etc.

Reference year

Reference values to forecast consumption.
It contains one value per day for a specific year.

Typical examples for reference year tables are:

- Heating degree day values to forecast energy consumption.
- Outside temperature.
- Daily production numbers in a production facility, etc.

Dimension

Subdivision of an organizational unit (e.g. property) into several hierarchically structured subunits (e.g. buildings, floors, rooms).

Typical CC dimensions are:

- Building dimensions: This is the most commonly used dimension comprising various hierarchical levels such as properties, buildings, floors, etc.
- Organization.
- Cost center.

A dimension greatly influences the creation of reports, as reports must always relate to one of the subunits.

Forecast model

Element to create a forecast for a certain value type (e.g. heat) in relation to a node (e.g. an existing building).

Forecast models always reference a specific value type and must be allocated to a node.
Restriction: You can use forecast models used within a single dimension.

Typical examples for forecast models are:

- Energy consumption as a function of degree days.
- Energy consumption as a function of the outside temperature, etc..

Flow nature

Allocation of a meter to a main function.

Each meter must be assigned to one of the four flow natures: One or several flow natures can be used for calculation during report creation.

The four meter categories are:

- **Production (meter)**
  Measures a medium output for **generation** purposes such as the output of gas to a boiler (production purpose).
- **Distribution (meter)**
  Measures a **distributed** medium such as the amount of hot water distributed by the central heating boiler.
- **Consumption (meter)**
  Measures consumption at the location where the energy or any other medium is consumed.
- **Other (meters)**
  Reserved for all other flow natures such as data acquisition of an access control system or outside temperature, etc.

Meter report

Tabular display of the acquired raw data for an individual meter or a group of meters.

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